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The Productivity of British Agriculture

The recovery programme of the United Kingdom proposes a considerable expansion of British agriculture, beyond even the war-time peak of 1943/4. This is no doubt only partly based upon economic considerations ; nevertheless, even where economic considerations are not decisive, they cannot be neglected, since it it always desirable to ascertain as nearly as we can, the economic cost of non-economic objectives.

On the purely economic plane, the comparison to be made is between the amount of food which can be produced here by a given quantity of resources, and the amount which might be obtained if the same resources were employed in export industries, and their proceeds exported in order to buy food. It is these two quantities that this paper tries to estimate.

The undertaking is hazardous, but it is necessary to proceed in this way if we are to get even an approximately acceptable comparison of costs. If wages, rents and profits were the same in all industries ; if prices were equal to marginal costs ; and if the rate of exchange between sterling and foreign currencies were the "equilibrium" rate ; then money costs would equal real costs, nearly enough, and we need not do any more than compare the money cost of growing food at home with the money cost of importing it. Since, however, money costs do not accurately reflect real costs, any such comparison would be misleading. We have to work in terms of real costs if our results are to reflect the real situation.

The undertaking is hazardous because of the uncertain elements in any such calculation. In order to proceed this way, we have to know how input and output are related, in real terms, in agriculture, and in export industries, at the margin ; and information on these matters is scant, and unreliable. But the attempt must nevertheless be made, if policy is not to be made entirely in the dark.

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In this paper it is assumed that the equivalent of 50,000 men fully employed at harvest time, are available for work either in agriculture or in the steel industry; and their net outputs in either industry are compared.

There are two possible objections to this course. First, in so far as agriculture is to be expanded not by increasing its use of resources, but by improving productivity through spreading scientific knowledge, then the expansion costs only the expense of education. This is perfectly true. But it is not intended to increase output exclusively by increasing productivity; on the contrary, agriculture is to absorb resources which will have to come out of other industries, or which could be devoted to other industries. And even if the whole of the extra output were to come from higher productivity, there would still be the alternatives of increasing output and of releasing resources to work in other industries.

The other possible objection is to the comparison with the steel industry, since this is one of our most productive export industries. It is, however, this that makes the comparison valid. For, if we are to expand exports instead of expanding agriculture, then it is the steel industry, and the industries using steel, which seem, at present, to have the best prospects of expansion. In so far as it is by selling more steel that we would be able to buy more food, this is the right comparison to make.

I. Productivity in Grain.

Agriculture produces many different products, but it is only those that are strong substitutes for imports that need concern us. Thus, since very little fresh milk can be imported, there is no point, for our purposes, in measuring productivity in milk. The major expansion over pre-war production contemplated by the government is in grain, with which this section deals. Section II measures alternatively the productivity of the home beef industry.

How much extra grain can 50,000 men produce? This depends, in the first place, on the part of the country where the expansion takes place.

Even before the war the growing of grain had been increasingly concentrated in the South-East of England, and the war-time expansion also affected this area most. In 1943-4 all the counties South-East of a line drawn from the Humber to the Severn had over 50% of their area of tillage and 40% of crops and pasture under grain ; some, such as the Isle of Ely tilled 86% of their area. Since that time the sowings of grain have shrunken somewhat, but with the increased incidence of "take-all" disease, and the exhaustion of soil, which is said to have taken place from repeated croppings, any large expansion could only be expected from this part of the country in case of emergency.

The new area, then, must come from the North and West where specialised livestock production on small family farms has been the rule. These lands have been sub-marginal for wheat, not necessarily because they yield less per acre—some parts of Lancashire yield two tons of wheat to the acre and must be among the most fertile in the world—but because of higher production costs due to wetter weather, smaller farm units, and the heavier soils. The shorter harvests and smaller fields make necessary a greater amount of labour and machinery per acre, and grain-driers become almost a necessity for use with combine harvesters. For an average figure the high yields of Cheshire may be taken as counterbalancing those of Yorkshire and Wales, so that the average yield will be only a little lower than that of England and Wales ; say about 17 cwt. of wheat and 16 cwt. of coarse grain to the acre. Owing to the natural difficulties of work in these areas it will be a considerable achievement if labour requirements are maintained at present United Kingdom averages. No considerable improvement is observable in the times taken at the major British research stations in recent years, being about 40 man-hours per acre for wheat and slightly more for oats.[1]

The number of acres that can be worked by any given number of men is determined by the peak requirements of the harvest. This peak is very marked. On a specialist mechanised wheat-farm before the war 70% of the field work

[1]G. G. Hays, *The Farm Economist*, Spring, 1946.

was done in 20 weeks, from July to November, which covered harvest and seed time. For long periods the fields were quite idle, only 15% of field labour requirements falling between November and February, and other work, such as machine repairs, and hedging, being limited.[1] On less mechanised farms the concentration in the harvest period is even more marked, being about 20 M.H. per acre-year out of a total of 40 M.H. per acre-year for all operations. Since the harvest does not last more than eight weeks in any area[2] each man could work 320 hours, and 50,000 could harvest 800,000 acres. The peak demand could almost be halved with full mechanisation, but in these areas such a development is most unlikely.

At an average yield of 17 cwt. of wheat or 16 cwt. of coarse grain per acre, the output of 800,000 acres is 680,000 tons of wheat or 640,000 tons of coarse grain. From this we must deduct two cwt. an acre for seed.

The value of this grain must, of course, be calculated at the *import* price of grain, for comparison with the *export* price of steel, since these are the terms on which exchange may proceed. The ultimate end of the calculation is to discover at what price of grain the net output of wheat would be equal in value to the net output of steel. But we begin by calculating the value of grain at more or less current prices. The price chosen for wheat is two U.S. dollars per bushel, or £18·7 per ton at the rate of $4·03 to the pound ; and the price for coarse grain is taken as £17 a ton, which has been quoted as a recent "world price" for maize.[3]

The agricultural programme[4] foresees an expansion of output, four years from 1948/49, in the ratio of one ton of wheat to one ton of coarse grains. The gross value of the grain output of 800,000 acres, on this basis (less seed) is £10·4 millions. To this must be added the value of the straw produced, at one ton per acre of wheat and 18 cwt. per acre of coarse grain,

[1] H. B. Whitby, *Scottish Journal of Agriculture*, 4th October, 1936.

[2] The fact that coarse grains are included lengthens the period.

[3] *House of Commons Official Report*, 26th May, 1949, Col. 1468. In the autumn of 1948, British prices, including subsidies, were £25 per ton for wheat, and £21 per ton for oats.

[4] White paper on *European Co-operation*, Cmd. 7572, p. 15.

valued, in 1948 at £3 per ton of wheat straw, £4 per ton of oats straw, and nil for barley straw, when bailed.[1] For 800,000 acres this adds up to about £2 million for straw, according to the composition of the crop, and brings the total gross output up to £12·4 millions.

From this must be subtracted, in order to arrive at net output—(1) the product of the land in alternative uses, (2) the cost of raw materials, and (3) the cost of additional machinery and fixed capital.

It is assumed that the land put under wheat would alternatively have been under grass. It seems to be intended that there should be a six year rotation, two years of grain alternating with four years under grass. The total acreage involved, therefore, if the grain harvest is to cover 800,000 acres, is 2,400,000 acres, of which 1,600,000 acres will at any time be under grass.

The management of grassland under this system takes much more labour than does permanent grass; about 50% more labour per thousand acres. The number of men engaged in looking after livestock on the two-thirds of the area under ley grass, plus those engaged in current maintenance work on the whole area will therefore just about be equal to the number previously working on the whole area, and the 50,000 extra men whom we are considering are a net increase.

With better management, more fertilisers, and new strains of grass, the output of ley pasture increases by about 25% above what is now usual for permanent pasture. If 25% more is obtained from 33% less land, the total output of livestock products will fall by about 16%. Taking output as one cwt. of meat per acre per annum, the decrease in output over the whole area would be 17,000 tons. The import price of meat is about £100, but English meat can command a premium of about 10%, so this meat would be worth about £1·9 million. There would also be a loss of offals bringing the total loss up to about £2·3 millions.

[1]Home prices must be used for straw as no imports take place. The price fluctuates widely on changes in supply.

In addition there are the costs of the ley. 400,000 acres seeded every year with grass seed, at 32½ lb. per acre, is a heavy item. At 2/- per lb. this works out at £1·3 million. The cost of silage, on the other hand, is somewhat reduced, since at any time only two-thirds of the area will now be under grass. This saving may be put at £1·3 million (on molasses, drying machinery and silos) so that the net extra cost of the ley is zero.

Secondly, we must deduct the value of the raw materials needed for growing the grain. Seed has already been deducted. Manures vary much in cost; the average in the North-West in 1947 was about £3 per acre. Fuel and miscellaneous materials cost about £1·5 per acre. Raw material costs on the total area thus amount to £3·6 million.

Thirdly, there is the extra cost of machinery and extra fixed investment. The depreciation of machinery is complicated by the large amounts already invested in this way on British farms. Thus, there is already one tractor to every 127 acres of crops and pasture, or 70 acres of arable, in Britain, while the ten most highly mechanised countries in the world averaged only one per 168 acres of arable,[1] and it would seem unlikely that many more would be required, however great the intensity of cultivation. The existing machines would be used more, however, so that the replacement rate would rise. This item must largely be guesswork. We assume that there are now 19,000 tractors on the 2,400,000 acres involved, and that the extra work they will have to do on grain in two years out of six will reduce their average life from eight years to seven years. Annual replacements will therefore grow from 2,375 to 2,714, and the cost of the extra 339 is about £153,000.

For harvesting machinery, requirements are taken as being proportionate to the average in use in Great Britain; and the life of the machine as that given in the National Farmers' Union's *Review of Machinery Requirements*. Binders, at one per 50 acres of grain, with a life of 11·7 years, should impose an annual charge of £456,000. Combines, at one per

[1]Political and Economic Planning. Engineering Reports I. *Agricultural Machinery*, p. 66.

800 acres, life seven years, amount to £90,000. Other field machinery will be needed, valued at £7 million, with an annual charge of £700,000. About 100 grain driers will also be needed, with a life of 20 years, and an annual charge of £100,000. Prices are necessarily wide approximations to current replacement values, which vary widely with the type of size of the machine. The total annual charge for machinery, including tractors, thus works out at £1·5 million. Repairs are a very heavy item, which may bring the total cost up to £2·5 million.

Extra building and maintenance work will also be required, and this is estimated roughly at £400,000 per annum. There should also be a charge for interest on additional capital, but this item is very uncertain, and has been ignored in all the comparisons. The total capital charge is thus taken at £2·9 million.

We can thus calculate the net output of 50,000 more harvest workers in grain as follows :—

	£ million	
Value of product		12·4
Deduct : Cost of shift from meat ..	2·3	
Raw materials	3·6	
Capital	2·9	
	——	8·8
		——
		3·6
		——

If this net output of £3·6 million were to be attributed to 50,000 man-years, the output per man year would be very low. However, only a fraction of the 50,000 are fully employed throughout the year. Those who are permanently employed will only be fully occupied between October and April (in addition to the harvest). In that period a man may work say 1,200 hours (30 weeks of 40 hours each), and, as the grain crop needs in this period about 20 man-hours per acre, we may conclude that the 800,000 acres will provide extra full-time employment in agriculture for about 13,500 men.

To an unknown extent the rest of the peak demand may be met by holiday camps, or the overtime of present labour,

but for the most part it must come from borrowing labour from other uses at harvest time. 36,500 borrowed for eight weeks would be the equivalent of 5,600 man-years. Some of these would be borrowed for a longer period, in the sense that their agricultural spell would not fit neatly into an absence from other labour; but on the other hand, others, such as holiday makers, should not count as a deduction from other work. If we take the total extra employment as 19,000 man-years, this seems a reasonable figure.

The net output per man-year is thus £189, if wheat is valued at 10/- a bushel. If the price is reduced to 7/6d. (and coarse grains correspondingly) net output is reduced to £52; in other words, for every sixpence by which the price alters, net output alters by £27 per man, assuming all other prices (including the cost of machinery and the price of meat) to be constant.

This can be checked as follows. According to the *Farm Management Survey* published by the Agricultural Economics Department of the University of Manchester, relating to 300 farms in the North-West, wages (including farmers' labour) on arable farms were about 60% of net output in the year 1947/48. As wages were about £250 per man, this yields a net output of £417 per man.

In order to make our figure comparable with this, we must first add back the £2·3 million deducted as the cost of the shift from meat, since the comparable item, rent of land, is included in the £417 per man. And, secondly, we must re-value the grain at the price which farmers were actually receiving. This price including subsidy, was about £21·7 per ton of wheat in this year. This revaluation adds a further £1·7 million. On a comparable basis therefore, the net output of our 19,000 men is £7·6 million, or £400 per man-year. This is a little lower than the £417 calculated from the *Farm Management Survey*. But we should expect our figure to be lower, first because we should expect wheat output per man to fall as the area is extended, and secondly because arable farms in the North-West carry many crops more profitable than wheat.

The same *Survey* permits another figure to be checked. When we deduct £2·3 millions as the cost of the shift from meat what we are doing is trying to find the value in alternative uses of the extra land which has to be combined with the extra 19,000 men. At £2·3 million this works out at just under £3 per acre. Now in the North-West, the *Survey* gives: "Rent and rates" as £2 per acre on arable farms and £1 per acre for livestock rearing. Accordingly our calculation is valuing land at least 50% more than the current level of rents. This is probably right, since it is widely held that rents are now well below the marginal productivity of land.[1] Indeed, it is probable that our figure of £3 per acre is probably not too high but too low, as a measure of the value of crops lost by switching to grain. This difference serves again to emphasise why comparisons of productivity based on the money costs paid out by entrepreneurs are not to be trusted absolutely.

II. Productivity in Beef.

In this section it is assumed instead that the equivalent of 19,000 man-years is added to the production of beef.

More beef can be produced either by increasing the breeding capacity at home, or by importing bullocks for fattening. It is the latter method that must be considered at the margin. At present, farmers receive a subsidy of £5 for each beast which they rear themselves, which is not paid on imported beasts, but nevertheless they import cattle from Ireland for fattening. This calculation is thus made on the assumption that extra beef will be produced by importing more cattle for fattening.

The bullock weighs 10 cwt. when it is imported, and is sold weighing 12·2 cwt. after 168 days; these are averages with which we shall work. The bullock yields 8 cwt. of meat, 4·2 cwt. of offals, and 5 tons of manure. If the import price of meat is taken at £100, and the price of English meat at 10% more, the value of this meat is £44. The offals are worth £9, and the manure £5, so the gross product per bullock is £58.

[1]See, for example, K. S. Lomax, "An Agricultural Production Function for the U.K.," *Manchester School*, May, 1949.

The import cost of the bullock is £45, but the cost to the farmer, after transport and other charges, will be £50 at least. In addition, it uses 3·5 tons of straw (including 2 tons of straw for litter), 0·5 tons of grain and 3 tons of roots. The import price of coarse grain is £17 per ton. The grain could be grown here, but its real cost would be as high or higher, as we shall see in Section IV. Alternatively, it is proposed to reduce dependence on imported feeding stuffs by increasing the productivity of grass land, but even when this is done there will still be a large import of coarse grains for livestock. The bullocks imported for purposes of this calculation may be considered therefore, if not as increasing the import of feeding-stuffs, yet at least as preventing it from falling as much as it would otherwise fall, which comes to the same thing. The cost of the grain is £8·5 per bullock, the cost of the straw is £7·5 and the cost of roots is £6. In addition, there is an annual charge of £0·4 for extra fixed investment. The total cost of the bullock is therefore £76·4.

If gross product is £58 and cost is £76·4, obviously net output is negative. This is not surprising, for, in order to maintain home production, the government is having to pay the farmers a price about 60% higher than the import price of meat, or about £20 more per bullock than is allowed above ; on the other hand the farmer has to pay about £4 a ton more than the import price for his grain ; so his net output per bullock is probably slightly negative—and many farmers do, indeed, say that all they get out of keeping bullocks is the manure.

It must not, however, be concluded that because net output is negative therefore it must be unprofitable to produce more meat at home. The conclusion that it is unprofitable follows from the assumption that meat can be imported instead at £100 per ton. In fact the price of £100 per ton is not bringing in all the meat that we need. The price which we should use for this calculation is the marginal price we would have to pay if we could get all the meat we wanted, and this is probably much higher than £100 per ton. Obviously, if we could not get more meat from overseas at any price whatever, it would

pay to produce the extra meat at home. It is the marginal comparison that counts.

We can calculate how high the import price must be if meat production is to be as productive as grain, by calculating in terms of net output per man. One man can look after about 50 bullocks, but as fattening is done only in the winter, the worker is free for half the year to participate in arable farming. One man-year therefore accounts for 100 bullocks. Net output per man-year in grain, we have calculated is £189 (if wheat is valued at 10/- a bushel). If the price of meat rose, net output in grain would fall by about £10 per man for every 10% increase in the price of meat. At the same time the net output in beef rises by £440 per man for every 10% increase in the price of meat. So both net outputs would be the same, at about £144 per man, if the price of beef were 45% higher. That is to say, if the import price of wheat were 10/- a bushel, and the import price of meat, needed to get us all the meat we require, were £145 per ton, grain growing and livestock fattening would be just about equally productive, at the current price of Irish bullocks.

III. Productivity in Steel.

The British Iron and Steel Federation has been good enough to make available the result of its calculation of net output per man in the group of industries defined by the Census of Production as "Iron and Steel Trade (Smelting and Rolling)." The figure, based on the last quarter of 1947, is an annual net output per man of £465 ± 25.

To make this figure comparable with the calculations in this paper, we must subtract the depreciation of capital. This is estimated by the Federation at £35 per man. Net output per man is thus reduced to £430 ± 25.

This is the average output. Marginal output is higher, because the new steel plants are more productive than the old ones, but marginal depreciation is probably much higher too, because of the high cost of building new plants. Possibly a figure of £430 per man may be just about right at the margin.

IV. Comparative Productivities.

Since these calculations were made the pound has been devalued to $2·80. The sterling price of $2 wheat is thus increased from 10/- to 14/3 per bushel. If this were the only sterling price to be altered, net output per man in grain would become £424, and it would be just as profitable to increase the production of grain in this country as to increase the production of steel.

Devaluation, however, will alter many prices in unforeseeable ways. By itself, it tends to reduce the dollar price of wheat, and to increase the sterling price of steel.

Once more, however, as in the case of meat production, what we are concerned with is not what import prices are established at any time, but what the price would be if we were buying more agricultural produce and trying to sell more steel. This by itself could certainly be expected to turn the terms of trade against us, and to increase the attractiveness (or diminish the disadvantage) of grain relatively to steel.

If Britain is really to have a big export drive which will close the gap in the balance of payments, it does not seem unreasonable to conclude that the productivity of growing grain in this country must now be regarded as not very different from the productivity of making steel, and that agriculture is no longer to be classed among the inferior industries of this country. For if grain is comparable with steel, it is all the more comparable with some of the other export industries which are less productive than steel, such as textiles or pottery. Agriculture was an inferior industry when the world was carrying big surpluses of grain, and prices were moving in favour of manufactures.

This conclusion is borne out by what has happened in the United States. In that country grain farmers have moved up from being one of the poorest to one of the richest groups. Now in that country the ratio between the productivity of farming and the productivity of industry is lower than it is in Great Britain. Hence we should expect to find farmers in Britain even more properous relatively to other sections of the community than are farmers in the United States.

It is not, however, the purpose of this paper to reach precise conclusions. The limitations of the data do not permit such conclusions. In particular, the calculations of agricultural productivity are subject to considerable error. The net results seem to be reasonable, when compared with earnings, but the calculations are obviously hazardous. The paper is written as much to explore a technique, and to stimulate other researchers to substitute better figures, as it is to establish conclusions on the importance of agriculture.

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Productivity in the Cotton Spinning Industry

INTRODUCTION.

The concept of productivity is familiar to most of us these days. Productivity in this country is contrasted unfavourably with American experience, and we are informed continually that our economic recovery depends upon an expansion of output per head. The idea has been applied to most industries, but to none, perhaps, so much as to the cotton industry. The idea first came into prominence in Lancashire about the time of the war-time "Platt" Mission to America, and to-day the subject is intimately bound up with that other talisman, redeployment.

The concept of production per head is obviously of some importance to the cotton industry, and it is natural to ask what is known about the facts of the case. In this connection there spring to mind the "Platt" report, which compared production per man-hour in Lancashire with that achieved in the United States, and the valuable work of the Shirley Institute, which, with its Abbreviated Surveys, has investigated productivity in the spinning section of the industry, and analysed the labour used in the individual processes in considerable detail. What has so far been noticeably lacking is an attempt to measure the change in output per head with the passage of time. In this we lag behind the Americans, who have published estimated of changes in output per head, based on the Census of Production, for all their industries.

An attempt to remedy this lack of information as far as the spinning section of the industry is concerned was made in the Working Party Report on the Cotton Industry (Table 45, page 149). Here estimates were given of output per head during the war years and the first post-war months as compared with 1937.

The uncomfortable conclusion was reached that output per-head at the beginning of 1946 was about 20% less than in

1937. On the basis of these figures gloomy statements were made about the state of the industry.

It was obvious that the bald figures in this table presented the situation in as black a light as possible, and that they were inadequate in many respects. One great objection was that the figures were based on the total number of employees in spinning mills, including many not engaged in actual productive work. Whilst the total number employed in the industry was very much fewer than in 1937, it was known that this was not the case with the non-productive workers, particularly in view of the growth of welfare departments. In addition, the total number employed included many engaged in ancillary processes, such as winding and beaming, who are strictly speaking irrelevant as regards output of yarn. It was clear that figures of output per head based on the numbers actually employed in processes up to spindle point, *i.e.* the directly productive operatives, would give a truer picture of the changes in productivity, and would to some extent relieve the gloom caused by the original figures. Other objections to the figures as they stood were the crude nature of the adjustments to take account of the changes in the relative outputs of different counts, the fact that the 1937 figures were based on a different source from that of the later figures, and the absence of an allowance for changes in average hours worked.

For these reasons the Cotton Board felt that there was a need for a reliable comparison between pre-war and post-war figures of output per head. Accordingly in May, 1948 a survey of man-power and output in spinning mills (excluding waste spinning mills) for representative weeks of 1939 and 1947 was conducted. The weeks chosen for this purpose were the week ending 6th May, 1939 and the week ending 8th November, 1947, these being unaffected by seasonal influences such as holidays. On the man-power side details of employment both in processes up to spindle-point and in ancillary processes and mill services were required ; in addition, the operative hours worked in processes up to spindle-point were asked for. On the output side the conditional weight of each count produced was required, and whether spun on mule or ring spindles.

METHOD OF ANALYSIS.

A straight comparison of output per operative-hour at two dates, as measured by the weight of yarn produced, is obviously misleading if the average count spun has changed appreciably in the meantime. In order to correct for the change in average count it is necessary to know exactly how output per operative-hour varies with count, and from the data at our disposal it is possible to make an estimate of this. It is desirable to do this separately for purely mule mills and purely ring mills, and accordingly two selections were made from the returns, one consisting of mills doing nothing but mule spinning at both periods, and the other of mills doing nothing but ring spinning at both periods. The selections were limited to mills giving complete details of production and hours worked for both weeks, and were by this means narrowed down to 48 mule mills and 66 ring mills.

Instead of working with P.M.H. (production per man-hour), it is much more convenient to use O.H.P. (operative-hours per unit of production). In our case, the unit of production is taken to be 100 lb. of conditioned yarn and, accordingly, the number of operative-hours worked per 100 lb. of yarn was calculated for each of the selected mills, and for both weeks.

It is now possible to draw scatter diagrams, taking O.H.P. along one axis and average counts along the other, and plotting one point for each mill. Four such diagrams were drawn, representing mule mills and ring mills in 1939 and 1947. In all cases it was found that a straight line gave a fairly good approximation to the relationship between O.H.P. and average counts, and "best straight lines" were fitted to all the diagrams by the method of least squares. The points are scattered fairly widely about these lines. It was evident that a second order curve would give a better "fit," particularly for the mule mills, where the straight lines underestimate the O.H.P. for coarse counts, but it was decided to work with the straight lines as reasonably good first approximations. Second order curves have in fact been calculated, but have not been used in the analysis.

The O.H.P. for any particular mill can be split up into the hours worked in the cardroom and the hours worked in the spinning room. Thus, separate scatter diagrams can be drawn for the cardroom and the muleroom of mule-spinning mills, and for the cardroom and ring room of ring-spinning mills, and straight lines can be fitted to all these. The straight lines of "cardroom O.H.P." and "muleroom O.H.P." for purely mule mills will be additive, giving the line of "total O.H.P." for mule mills, in the same way that the "cardroom O.H.P." and "muleroom O.H.P." of an individual mill are additive, giving the "total O.H.P." of that mill. A similar result holds for the purely ring mills.

For the purpose of this enquiry it is desirable to differentiate between course mule mills and fine mule mills, a convenient distinction being effected by separating those mills with a combing process from those without. By this means the 48 mule mills were separated into 22 coarse mills and 26 fine mills. Straight lines may be fitted to the points representing "total O.H.P." for both these sub-selections, and lines of "cardroom O.H.P." and "muleroom O.H.P." may be fitted as before.

As an illustration two of these equations may be quoted here. Thus the equation for mule mills in 1939 is $y = \cdot 8150x - 7 \cdot 77$, and for ring mills in 1939 it is $y = \cdot 5266x + 5 \cdot 99$. In each case y stands for the total number of operative-hours required to produce 100 lbs. of yarn, and x stands for counts.

We are now in a position to compare productivity in 1939 and 1947, allowing for the change in average counts. We define the "labour content" of a given weight of yarn of a given count to be the number of operative-hours required to produce it by an "average" mill in 1939, and this may be calculated using the appropriate straight line, mule or ring as the case may be. With this definition the sum of the "labour contents" of several quantities of yarn of different counts may be

calculated by using the average count in the same way that an individual count is used in the definition.[1]

The total "labour content" of a quantity of yarn may be split up into cardroom and spinning room components by using the appropriate straight lines in each case.

If now we express the output of a mill, or a group of mills, in terms of "labour content," and divide by the number of operatives, or the number of operative-hours worked, we have a measure of productivity independent of the counts spun. Thus we can compare the productivity of the industry, or of an individual mill, at two dates, and the comparison will allow for any change in the counts spun. We can equally well compare the productivities of two mills at the same date regardless of whether they spin different counts, and by this means we can rank mills in terms of output per operative-hour.

RESULTS.

Table I shows 1939 and 1947 figures of production and numbers at work for the mills covered by 281 returns having comparable figures for the two weeks.[2] These mills had 66,170 persons at work at 8th November, 1947 out of an estimated 98,550 for all mills.

[1]Suppose that the equation of the 1939 straight line in question is $y = ax + b$, where y stands for the number of operative-hours per 100 lb. of yarn and x stands for the counts, and suppose that we have quantities 100 p_1 lbs. of count x_1, 100p_2 lbs. of count x_2 etc., so that altogether we have 100 $(p_1 + p_2 + \ldots)$ lbs. of average count $\frac{p_1x_1 + p_2x_2 + \ldots}{p_1 + p_2 + \ldots}$. Then using the average count in the same way as an individual count in the definition, the total "labour content" is $(p_1 + p_2 + \ldots) \left\{ a \frac{p_1x_1 + p_2x_2 + \ldots}{p_1 + p_2 + \ldots} + b \right\}$ which is equal to $p_1(ax_1 + b) + p_2(ax_2 + b) + \ldots$, *i.e.* the sum of the individual "labour contents."

[2]Part-time workers have been included in employment figures as whole numbers throughout and not as halves as, for instance, in the Working Party Report. Part-time employment is allowed for, of course, in the figures of hours worked.

TABLE I

PRODUCTIVITY IN THE MILLS COVERED BY 281 REPLIES

	1939	1947
Total production (in thousand lb.) ...	14,493	10,263
Average counts	30·18	29·26

Number at work during the week	1939	1947
Up to spindle-point	60,991	48,336
In ancillary processes	10,853	9,024
Mill services	7,583	8,810
Total	79,427	66,170

Production per head (in lbs.)	1939	1947	1947 as % of 1939
All employees	182·5	155·1	85
Employees up to spindle point ...	237·6	212·3	89

This shows that between the two dates production per head declined by 15% as regards all employees, and by 11% as regards those employed in processes up to spindle-point. The figures do not take into account the slight reduction in average counts spun. The difference between the two percentages indicates clearly the increased proportion of the total labour force not directly engaged in the production of yarn, and in particular the actual expansion in the mill services. The biggest increase here was registered in the welfare departments, and there was also a substantial increase in the number of engineers. The figure of 15% may be compared with the "unweighted" decline of considerably less than 10% for 1945 and the beginning of 1946 as given in the Working Party

Report, bearing in mind the differences in treatment of part-time workers. Between the two dates, however, there was a reduction in the standard working week and a considerable increase in the production of the finer counts. The results for this sample have not been analysed in any greater detail, but may be regarded as a check on the results for the smaller sample which follows.

These results, for the mills covered by 186 returns with comparable figures of production, numbers at work, and hours worked for the two weeks, are given in Table II. This sample covers mills having 43,540 persons at work at 8th November, 1947. This smaller sample shows the same declines in output

TABLE II

PRODUCTIVITY IN THE MILLS COVERED BY 186 REPLIES

Production	1939			1947		
	Weight of yarn	Average counts	"Labour content"	Weight of yarn	Average counts	"Labour content"
	(000 lb.)		(000 "operative hours")	(000 lb.)		(000 "operative hours")
Cardroom						
"Mule" ...	4,325	33·73	444·1	2,934	35·04	316·1
"Ring" ...	5,436	24·30	421·4	3,944	21·59	288·1
TOTAL ...	9,761	28·48	865·5	6,878	27·33	604·3
Muleroom	4,323	33·74	408·7	2,930	35·08	293·8
Ringroom	5,422	24·31	598·3	3,923	21·61	394·5
TOTAL * ...	9,761	28·48	1,872·5	6,878	27·33	1,292·6

* Total production is taken to be the same as the output of the cardroom, which includes in a few cases intermediates and rovings which were not spun. For this reason it is not exactly equal to the sum of the outputs of the muleroom and the ringroom.

Table II (*contd.*)

Number at work during week	1939	1947
Muleroom	9,825	7,207
Ringroom	11,655	9,114
Cardroom	18,645	15,471
Total up to spindle-point	40,125	31,792
In ancillary processes	7,544	6,056
Mill services	4,898	5,693
Total	52,567	43,541

Operative-hours worked (thousands)	1939	1947
Muleroom	452·7	319·6
Ringroom	546·9	379·2
Cardroom	864·6	656·3
Total	1,864·3	1,355·2

Productivity	Weight of Yarn		1947 as % of 1939	"Labour content"		1947 as % of 1939
	1939	1947		1939	1947	
Output per head (all employees)	185·7	158·0	85	35·62	29·69	83
Output per head (employees up to spindle point)	243·3	216·4	89	46·67	40·66	87
Output per operative-hour :						
Overall	5·236	5·076	97	1·0044	·9538	95
Cardroom ...	11·289	10·480	93	1·0010	·9207	92
Muleroom ...	9·549	9·168	96	·9027	·9192	102
Ringroom ...	9·914	10·343	104	1·0939	1·0403	95

per head as regards all employees, and as regards those in processes up to spindle-point—15% and 11% respectively—as the larger sample. We can now take into account the change in average hours worked. Between the two weeks the nominal working week was reduced from 48 hours to 45 hours, a reduction of 6%. In fact, the average hours worked in processes up to spindle-point for this sample declined from 46·5 hours to 42·6 hours, a reduction of 8%, the extra 2% presumably reflecting part-time working. Taking this into account, production per operative-hour declined by 3% between the two dates. In order to correct for the slight decline in average counts, the "labour contents" of the output of cardroom, ringroom and muleroom at the two dates have been calculated by the method already described, and the figures are included in Table II. For this purpose the output of the cardroom has been split into "mule" and "ring" according to the nature of the yarn spun from it. The "corrected" figures of productivity show a decline in output per head of 17% as regards all employees and of 13% as regards those employed in processes up to spindle point, and a decline of 5% in output per operative-hour. The figure of 17% may be compared with the "weighted" decline of about 20% for 1945 and the beginning of 1946 as given in the Working Party Report, with the previous reservations about the treatment of part-time workers and the reduction in hours worked.

Thus the basic fact is that, making the above allowances, output per operative-hour declined by 5% between the two dates. As a comparison of the intensity of effort of labour and the efficiency of management at the two dates this estimate takes no account, of course, of a variety of factors such as the supply and quality of raw material, the quality of the finished product, and so on ; moreover, a decline in productivity is to be expected at a time when the labour force is changing rapidly and is to some extent unbalanced. These reservations will be developed at a later stage.

In addition, the figures in Table II suggest that the decline in output per operative-hour is not uniform over all departments. In fact, the muleroom shows an apparent increase in output per

operative-hour of 2%, the ringroom a decline of 5%, and the cardroom a decline of 8%. Estimates have also been made of the changes in output per operative-hour for the two groups of 66 ring mills and 48 mule mills already used in determining the relationship between O.H.P. and average counts, and also for the two subdivisions of the latter group into "coarse" mills and "fine" mills. The corrected "overall" figures of changes in productivity in these groups have been further analysed into cardroom and spinning room components. The data for these calculations have been omitted from this article, but Table III summarizes the 1947 figures of production per operative-hour as a percentage of the corresponding 1939 figures, when corrected for the change in average counts.

TABLE III

PRODUCTION PER OPERATIVE-HOUR IN 1947 AS A PERCENTAGE OF 1939, ALLOWING FOR THE CHANGE IN AVERAGE COUNTS

	Overall	Cardroom	Muleroom	Ringroom
All Mills	95	92	102	95
Purely ring mills	90	84	—	95
Purely mule mills	98	98	99	—
Coarse mule mills	85	86	83	—
Fine mule mills	108	104	112	—

From these figures it would appear that there is little change in output per operative-hour in the muleroom on the average, but this seems to be due to a considerable decline at the coarse end balancing a considerable improvement at the fine end. In a similar manner the decline of 8% in the cardroom seems to be due to a slight improvement at the fine end partially balancing a considerable deterioration at the coarse end.

It may be asked how far the figure of a 5% decline in output per operative-hour is significant in view of the fact that it is based on a sample representing less than half the industry,

and further, whether it represents a "real" decline in productivity, or merely the casual resultant of random changes in the productivity of different mills. This question may be settled by calculating the change in productivity of individual mills and examining the uniformity of the changes. Accordingly, figures of "labour content" per operative-hour were calculated for both weeks for each of 178 returns. (This list differs from the previous one of 186 returns mainly in the elimination of some mills producing intermediates and rovings which are not spun). In calculating the "labour content" of the output of a mill, the mule-spun yarn was classified as either "coarse" or "fine" and the appropriate straight line used in each case. In this way we are, in effect, treating the relationship between O.H.P. and average counts for mule-spun yarn as being represented by two straight lines rather than as a single straight line, thus leading to more accurate results in view of the curvilinear nature of the relationship already noted. Having tabulated the differences in "labour content" per operative-hour at the two dates for each mill, a reasonably good test of the significance of the decline can be obtained by comparing the average difference with its standard error. In fact, the unweighted average decline in output per operative-hour is 4%, and the changes in productivity of the individual mills are sufficiently uniform to enable us to say with confidence that the overall decline in output per operative-hour is a "real" decline in the sense mentioned. (The estimate of 4% for the decline is probably better than the previous one of 5% because of the split-up of the mule-spun yarn into "fine" and "coarse"). Further, the 178 returns, whether mule, ring or mixed, were divided into "fine" and "coarse" sections, and the average changes in productivity for each of these sections were calculated. The "fine" section showed an unweighted average increase in output per operative-hour of 5%, and the "coarse" section a decline of 9%, in line with previous results. The decline in the latter case is certainly "real," and the increase in the former case is just about so.

Table IV shows the distribution of the 178 returns in terms of :—

(*a*) "labour content" per operative-hour in May, 1939;
(*b*) "labour content" per operative-hour in November, 1947;
(*c*) "labour content" per operative-hour in 1947 as a percentage of the corresponding 1939 figure.

TABLE IV

DISTRIBUTION OF 178 MILLS IN TERMS OF "LABOUR CONTENT" PER OPERATIVE-HOUR

"Labour content" per operative-hour	No. of mills	
	1939	1947
Less than ·55	2	4
·55 to ·65	7	7
·65 „ ·75	9	12
·75 „ ·85	26	26
·85 „ ·95	28	30
·95 „ 1·05	21	40
1·05 „ 1·15	41	26
1·15 „ 1·25	21	18
1·25 „ 1·35	16	9
1·35 „ 1·45	4	4
1·45 and over	3	2
TOTAL	178	178

DISTRIBUTION OF 178 MILLS IN TERMS OF 1947 "LABOUR CONTENT" PER OPERATIVE-HOUR AS PERCENTAGE OF 1939

1947 productivity as percentage of 1939	No. of mills
Less than 65	3
65 to 75	12
75 „ 85	31
85 „ 95	44
95 „ 105	35
105 „ 115	24
115 „ 125	12
125 „ 135	12
135 and over	5
TOTAL	178

Distribution (*c*) demonstrates the decline in productivity of the majority of the individual mills. The downward shift in output per operative-hour in the bulk of the mills is also illustrated by the comparison between distributions (*a*) and (*b*). These two distributions also indicate clearly the wide apparent "spread" in productivity between individual mills. These 178 returns, of course, include mills spinning widely differing counts, but cases of a mill with output per operative-hour twice as great as a mill spinning much the same counts are quite frequent. The Shirley Institute has reported "spreads" of this order in the results of the Abbreviated Surveys, and has discovered evidence of much greater variations in productivity at the separate processes. There are, of course, many legitimate reasons for differences in output per head, apart from differences in efficiency—the age of the machinery (in the case of ring mills), the type of cotton used, the quality of the yarn produced, the amount of twist in the yarn, etc. Nevertheless, differences of this order remain very striking. In this connection, an attempt was made to correlate output per head, as measured by "labour content" per operative-hour (calculated from the 1947 straight lines), with the size of the mill, as measured by the number of operatives in processes up to spindle-point. There is some suggestion that average productivity increases with the size of the mill from about ·90 in units of "labour content" per operative-hour to about 1·08 with mills employing about 140 operatives up to spindle-point. Average productivity remains more or less constant at this level for mills employing up to about 280 operatives, and then appears to go down again for larger mills. No great precision in this conclusion is possible owing to the large variation between mills, but the evidence is certainly in accordance with what one would expect on theoretical grounds. There is no evidence of differences in productivity between the spinning departments of vertical concerns and those of firms specialising in spinning.

CONCLUSION.

The salient features of the results may be summarized as follows. There was a general decline in output per operative-hour of about 5% between May, 1939, and November, 1947, despite some improvement in mills spinning fine counts. This, combined with the reduction in hours worked and the increased proportion of employees not directly engaged in the production of yarn, has meant an overall decline in output per head of about 17%. The main purpose of the enquiry was to determine the extent of these changes ; in addition, however, the results provide evidence of large apparent differences in productivity between individual mills. Before concluding this account of the investigation, however, a few reservations and comments on the interpretation of the results are called for.

In the first place, there are a number of factors in the nature of yarn which would of themselves tend to cause differences between mills in productivity as we have defined it in terms of "labour content." Such are the type and quality of cotton or staple fibre used, the amount of twist in the yarn, and the quality of the finished yarn, in so far as this is not determined by the two previous factors. Thus, by short-processing in the cardroom it is possible to dispense with labour at some cost in quality ; equally, it is possible to improve the quality of the yarn by using labour in a combing process. In our analysis of the results we have eliminated one obvious source of variation in "crude" productivity figures—differences in average counts spun—by using the concept of "labour content." In a similar manner, with a little more detail in the data provided, we could eliminate the variation due to different types of raw material, with a little more trouble we could eliminate the variation due to different amounts of twist, and in theory at least we could eliminate the variation due to other differences in quality, in so far as these could be measured or classified. In this way we could arrive at an "ideal labour content" for a quantity of yarn of given count and given quality, and an "ideal productivity" based on this ; the figures we have used are more or less crude

approximations to these "ideals." These remarks are particularly relevant to the comparison between individual mills; there is no doubt that differences in quality are responsible for some at least of the apparent "spread" in output per operative-hour. There is no reason to suppose, however, that changes in quality would modify to any great extent our conclusions about the decline in productivity between 1939 and 1947, though there have been many reports of a decline in standards since the war. These remarks about the quality of the end-product, suitably modified, are of course applicable to comparisons of productivity in any industry.

Given the "ideal" measure of productivity independent of the type and quality of the end-product, the productivity of a mill or an entire industry is the resultant of a number of factors such as the extent of mechanisation, the availability of raw materials, and a variety of factors which can be classified under "labour" and "management."

Considering first the question of mechanisation, it is in general true that an increased use of machinery will lead to a saving in labour. This may or may not be economical, but it would automatically lead to a rise in labour-productivity. However, this does not affect the cotton spinning industry to any great extent, the machinery being to a very large degree standardised. The only major difference in machinery is the one between mule-spindles and ring-spindles, and we have eliminated variations in productivity due to this in our analysis. The case would be different if any new labour saving device, *e.g.* automatic doffing, came to be adopted. As it is, probably the only appreciable effect of this nature is due to the differing ages of the machinery, though in the case of the muleroom age has probably no effect whatsoever. It is possible, however, that part of the overall decline in productivity since pre-war is due to the increased age of the machinery in the absence of large-scale re-equipment; and again, part of "the spread" in productivity between individual mills may be due to differences in the age of the machinery.

Coming now to the workers' share in productivity, we can distinguish between "ability to work" and "will to work."

The former depends on such things as skill and stamina, which in turn are affected by the training received, the age level of the workers, and the relative proportions of males and females. The "will to work" is determined by monetary incentives, working conditions, relations with the management, the traditions of the firm or industry, and conscientiousness. It is probably not unreasonable to assume that a large part of the decline in productivity between 1939 and 1947 can be attributed to the operatives, but to attempt to differentiate between the effects of "ability to work" and "will to work" is much more difficult.

Management's responsibility for productivity consists of such things as the deployment of the labour force, the layout of plant and relations with the workers. A good deal of the decline in productivity can probably be attributed to the labour shortage and the rapidly changing labour force which was characteristic of 1947. At this period managements with an eye to the future had to be content with some degree of unbalance in the staffing of individual mills, and this would inevitably lower output per head. The unbalanced labour force caused by the shortage of labour can reasonably be classified as a responsibility of the management, though in no way reflecting on its quality. On the other hand it is almost certainly true that much of the appearent "spread" in productivity between mills is due to differences in the quality of the management.

Of secondary importance in determining productivity are the regular flow of raw materials and similar factors, in so far as these are outside the control of the management. These are merely mentioned for the sake of completeness as there is no evidence concerning their effect in the case under consideration.

Having pointed out the various factors governing productivity, it is necessary to emphasize that it is not in general possible to equate high output per head with "efficiency" in the sense of low costs of production. The reasons for this are obvious. In general, capital and labour are to a certain extent substitutable as factors of production. Thus as a rule it is

possible to economise in labour by increased capital expenditure, and so cause a rise in output per head. Whether this leads to a reduction of costs depends, of course, on the amount of labour saved by a given expenditure of capital. Then again, it may be possible to lower costs by employing female labour instead of more expensive male labour, even though this results in a decline in output per head. However, in the case of the cotton spinning industry one would certainly expect productivity to be highly correlated with efficiency, bearing in mind the uniformity of the machinery used. With this in mind, an attempt was made to correlate "labour content" per operative-hour in 1939 with figures of average trading profits per spindle for a period of five years before the war in the case of a number of firms having no activities other than spinning. Average trading profit per spindle may be supposed to have a close connection with "efficiency," bearing in mind, however, that high trading profits may be partly due to efficiency in other activities, *e.g.* selling, as well as to efficiency in the actual spinning of yarn. On the other side, the figures of output per operative-hour do not take into account differences in quality. In fact, no correlation was observable owing to the very wide scatter in the figures of average trading profit per spindle. The evidence is not sufficient, however, to disprove the expected close association between productivity and efficiency.

In conclusion, it must be borne in mind that more than two years have elapsed since the period dealt with in the survey. There is no reason to suppose that the situation has not changed appreciably in the meantime, particularly in view of the wide-spread adoption of scientific redeployment. In view of this, it is possible that a fresh survey on similar lines will be undertaken in the near future in order to bring the picture up-to-date.

D. C. Shaw

Manchester.

Municipal Gas Costs and Revenue 1938-9 and 1946-7

The purpose of this enquiry was to examine the cost and revenue structure of typical gas undertakings, and the impact of war-time changes upon them. Attention was confined to municipal undertakings, since detailed information is available from many of them, in the form of published Annual Reports and Accounts. The survey covered 38 undertakings, ranging in annual gas sales (1946-7), from 20,000,000,000 c. ft. down to 300,000,000 c. ft. They may be taken as typical of larger municipal gas undertakings since they are well scattered throughout Great Britain. Between them they sold a little over 80 thousand million cubic feet of gas in 1946-7, or about 18 per cent. of the total gas sales in the country.

I. Costs and Revenue.

The analysis of gas costs and revenues presents difficulties owing to the important past played by residual products, especially coke. Coke sales account for 20 per cent. or more of the total revenue in some cases and the position is further complicated by the fact that coke can also be used as a raw material for gas making, being combined with gas oil in the so-called "water gas" process. For simplicity, attention has been concentrated on gas as the principal product, and the figures have been worked out in terms of the cost of producing each unit of gas sold and the revenue obtained for it. Thus total revenue, including the net proceeds of the sales of residuals, and also such items as net returns from sale and hire of appliances, has been expressed in terms of pence per thousand cubic feet. In effect, the revenue from these items has been treated as a kind of subsidy, reducing the price which must be charged for gas.

TABLE I

COST AND REVENUE PER THOUSAND CUBIC FEET 1938-9 AND 1946-7, WEIGHTED AVERAGE OF 38 UNDERTAKINGS

	d. per 1,000 c. ft.		1947 as percentage of 1939
	1939	1947	
Manufacturing Cost	25·34	48·46	191
Distribution and General Costs ...	11·86	11·64	98
Total Working Costs	37·20	60·10	162
Capital Charges	5·70	3·59	63
Revenue—Sale of Gas	32·82	44·76	136
„ —Residuals	10·03	20·60	205
„ —Other items	1·13	1·05	93
Total Revenue	43·99	66·41	151
• Total Gas Sales (million c. ft.) ... (sum of 38 undertakings) ...	60,862	82,915	136

• In the case of a few undertakings, the figures of gas sales include also gas used in the works. The effect of this in reducing the average costs and revenue per thousand c. ft. is offset by the greater weighting given to those undertakings because of their larger recorded gas sales.

These averages are based on figures for individual undertakings weighted for each year in proportion to gas sales. Over the war period it would appear that manufacturing cost per thousand cubic feet almost doubled, rising from 25·34d. to 48·46d. or by 91%, for a volume of gas sold only 36% larger. Unit distribution and general costs, on the other hand, were actually reduced slightly, from 11·86d. to 11·64d. Consequently total working cost per unit rose only from 36·69d. to 59·60d. or by 62%. Gas manufacturing costs are dominated by the cost of coal and to a lesser extent, wages. Except in so far as offset by changes of technique, the amount of coal used must increase roughly as output increases, while the price of coal has risen greatly. On the other hand an increased output means a

more intensive use of distribution plant and mains and a spreading of other overheads such as administration and meter inspection costs over a larger number of units. Hence in the case of distribution and general costs the rise in prices has been offset by more intensive use of capacity and unit cost is almost unchanged.

Total working costs per unit have risen more than total revenue per unit, which has gone up from 43·99d. to 66·41d. or by 51%. On the other hand capital charges per unit have been greatly reduced, from 5·70d. to 3·59d., and in 1946-7 were only 63% of 1938-9. Local authority trading undertakings raise their capital resources in the form of redeemable stock and provision is made annually for repayment as well as interest. During the war period the process of redemption naturally continued but there was less raising of fresh capital, hence capital liabilities were in most cases reduced, and with them the annual interest and repayment charge. At the same time the annual charge was being spread over a larger output of gas, which meant a further reduction in capital costs per unit.

Total revenue per unit increased by 51%, but revenue per unit from the sale of gas, which can be taken as representing the average price of gas, rose only by 36%, from 32·82d. to 44·76. This was because of the greatly increased contribution from the sale of residuals. Net residual revenue per unit of gas sold rose from 10·03d. to 20·60d., *i.e.* by 105%. Increased sales of residuals, and higher prices obtained for them, especially coke, meant that the full extent of the increase in the cost of gas-making did not have to be reflected in increased gas prices. The extent to which this happened is exaggerated in the figures, since it has not been possible to exclude from manufacturing costs and from residual revenue the value of coke used in gas making. During the war there was an increase in the use of the water gas process.

Summarising we may say that, although the actual cost of manufacturing each unit of gas nearly doubled, yet because of spreading of fixed costs of distribution and administration over a larger output, reduced capital liabilities also spread

over a larger output, and increased revenue from residuals, average gas prices had only risen by a little over a third.

TABLE II

COSTS AND REVENUE—PERCENTAGES OF TOTAL REVENUE—WEIGHTED AVERAGE OF 38 UNDERTAKINGS.

	1939 %	1947 %
Manufacturing Costs	57·6	73·0
Distribution and General Costs ...	27·0	17·5
Total Working Costs	84·6	90·5
Capital Charges	13·0	5·2
Revenue—Sale of Gas	74·6	67·4
„ —Residuals	22·8	31·0
„ —Other items	2·6	1·6
Total Revenue	100	100

In the second table the various categories of cost and revenue are shown as percentages of total revenue. The alteration in the relative importance of the three main cost categories is clearly shown. Manufacturing costs which in 1938-9 were 57·6% of the total, in 1946-7 had risen to 73·0%, whereas distribution and general costs had fallen from 27·0% to 17·5%. The "operating ratio," [1] to borrow a railway term, was higher in 1946-7—90·5% as against 84·6%, but against this capital charges had fallen from 13·0% to 5·2%.

On the income side the revenue from the sale of gas had fallen from 74·6% to 67·4%, while that from residuals had risen from 22·8% to 31·0%. It is interesting to note that even in 1938-9 revenue from sale of gas did not cover working expenses, but in 1947-8 it did not even cover manufacturing

[1] Working expenses expressed as a percentage of total revenue.

costs. This change is however, exaggerated by the increased use of coke in gas manufacture. The importance of residuals proceeds in reducing the price of gas is however clearly illustrated.

II. The Relevance of Size.

An attempt is now made to examine the effect on the above results of varying size of undertakings. The 38 undertakings have been arranged into five groups as follows.

TABLE III

GROUPING OF UNDERTAKINGS

Group No.	No. of undertakings	Gas Sales Range (million c. ft.)		Total Sales of Group (million c. ft.)	
		1938–9	1946–7	1938–9	1946–7
1.	5	15,900 —2,900	20,500 —3,700	38,852	50,673
2.	7	1,800 —1,000	2,400 —1,800	9,911	14,245
3.	9	900 —500	1,300 —900	6,175	9,392
4.	8	500 —400	600 —500	3,441	4,915
5.	9	400 —200	500 —300	2,483	3,671

It will be noted that Group 1, while containing only five undertakings, accounts for over 60% of the total gas sales.

Owing to the small numbers of undertakings in each group, too much weight cannot be given to the results that follow, but nevertheless certain general conclusions can be validly drawn.

TABLE IV

COSTS AND REVENUE—PENCE PER THOUSAND c. ft.
UNDERTAKINGS GROUPED ACCORDING TO SIZE

Weighted Averages

1939

Groups	Manufacturing Costs	Distribution & General Costs	Total Working Costs	Capital Charges	Revenue			Total Revenue
					Sale of Gas	Residuals	Other	
1.	25·13	11·80	36·96	4·70	31·79	9·42	0·70	41·91
2.	25·93	11·32	37·25	7·02	33·59	11·64	1·90	47·14
3.	24·83	12·40	37·25	7·20	34·48	11·08	1·55	47·10
4.	24·80	12·18	36·99	6·89	34·70	9·13	2·01	45·85
5.	28·14	13·08	41·20	8·75	39·22	11·60	2·53	53·32

1947

1.	47·61	10·91	58·52	3·07	43·73	19·84	0·53	64·10
2.	50·87	12·13	63·03	4·80	46·50	22·43	1·73	70·67
3.	49·35	12·80	62·15	3·50	44·85	22·57	1·54	68·92
4.	47·11	14·02	61·14	4·41	46·02	20·87	1·76	68·63
5.	50·35	13·73	64·08	5·22	50·23	18·67	3·40	72·34

1946-7 as a percentage of 1938-9

1.	189	92	158	65	138	211	76	153
2.	196	107	169	68	138	193	91	150
3.	199	103	167	49	130	204	99	146
4.	190	115	165	64	133	229	88	150
5.	179	105	156	60	128	160	134	136

Sale of Gas (Group Totals)

Groups	1938–9 (million c. ft.)	1946–7 (million c. ft.)	1946–7 as percentage of 1938–9
1.	38,852	50,673	130
2.	9,911	14,245	144
3.	6,175	9,392	152
4.	3,441	4,916	143
5.	2,483	3,671	148

Within the range of the undertakings considered there is little evidence of any great difference in the general level of costs or revenue according to size. The pattern of general trends which we found in the overall figures seems to apply to all the groups—*i.e.* the great increase in unit manufacturing costs, unit distribution and general costs virtually unchanged, a great reduction in unit capital charges, a rise in total unit revenue less than that of working costs, and an even smaller rise in average gas prices because of increased revenue from residuals.

Comparing the groups we find that in 1938-9 in Group 1, costs and revenue per unit tended to be slightly lower than in the other groups, while in Group 5 they tended to be rather more markedly higher. This is especially the case as regards capital charges, the level of which is particularly low in Group 1, and particularly high in Group 5. The level of distribution and general costs is markedly higher in Groups 3, 4, and 5 than it is in Group 1, and 2. This suggests a great spreading of fixed costs where production is on a larger scale.

The same general contrasts are also to be found in 1946-7. Group 1 still shows a level of costs and revenue slightly below the others and Group 5 a level slightly above. The increases over the war period appear to have been less in Group 5, so that it shows less difference from the other groups in 1946-7 than it does in 1938-9. In particular, manufacturing costs and residuals revenue show smaller increases in Group 5 than in the other groups.

Average gas prices appear on the whole to be lower in the larger undertakings than in the smaller. In 1938-9 the figure for Group 1 was 31·79d., and for Group 5 it was 39·22d. In 1946-7 the corresponding figures were 43·73d. and 50·23d. Yet the increase of price was less in the groups of smaller undertakings—*e.g.* Groups 1 and 2—38%, Group 3—30%, Group 4—33%, Group 5—28%.

TABLE V

COSTS AND REVENUE AS PERCENTAGES OF TOTAL REVENUE—UNDERTAKINGS GROUPED ACCORDING TO SIZE

Weighted Averages

Groups	Costs			Revenue				
	Manufacturing	Distribution & General	Total Working	Capital Charges	Sale of Gas	Residuals	Other	Total
1938–9								
1.	60·0	28·2	88·2	11·2	75·9	22·5	1·7	100
2.	55·0	24·0	79·0	14·9	71·3	24·7	4·0	100
3.	52·7	26·3	79·1	15·3	73·2	23·5	3·3	100
4.	54·1	26·6	80·7	15·0	75·7	19·9	4·4	100
5.	52·8	24·6	77·3	16·4	73·6	21·8	4·7	100
1946-7								
1.	74·3	17·0	91·3	4·8	68·2	31·0	0·8	100
2.	72·0	17·2	89·2	6·8	65·8	31·7	2·4	100
3.	71·6	18·6	90·2	5·1	65·1	32·7	2·2	100
4.	68·6	20·4	89·1	6·4	67·1	30·4	2·6	100
5.	69·6	19·0	88·6	7·2	69·4	25·8	4·7	100

Turning now to the percentage figures we see that in 1938-9 manufacturing costs tended to be a rather larger proportion of the total in the larger undertakings, although their actual level per unit was lower. Similarly they were smaller proportions of the total in the smaller undertakings although their level per unit was higher. On the other hand capital charges tended to form an increasingly large proportion of the total as the size of the undertaking was reduced. There was no significant difference of proportion between revenue from sale of gas and from residuals.

Comparing 1946-7 with 1938-9 we have the same changes shown in the groups as in the overall average, the rise in the proportion of manufacturing costs to around 70% of the total and the fall in the proportion of distribution and general costs and of capital charges. Capital Charges are still markedly lower in Group 1 than in the smaller groups. Similarly in all groups there is proportionally reduced revenue from the sale of gas and proportionally increased revenue from residuals.

The increased percentage for residuals is noticeably less in Group 5 than in the other groups, and in this group "Other income" [1] plays a larger part than elsewhere. In 1946-7, unlike 1938-9, the proportion of distribution and general costs (and not only the actual level per unit) tends to be higher in the smaller undertakings than in the larger. On the other hand, in 1946-7 as in 1938-9, manufacturing costs tended to be a smaller proportion of the total in the smaller undertakings than in the larger. This is because fixed costs per unit tended to be higher in the smaller undertakings and so tended to form a large proportion of the total.

III. The Cost of Fuel.

By far the largest single item in gas production costs is coal. Comparison between undertakings is complicated by the varying extent to which other processes such as the manufacture of carburetted water gas, are used in addition to the carbonising of coal. Because of this, and because of the varying amount of detailed data available, it has only been possible to calculate total fuel costs, including coal, gas oil and coke used in gas manufacture and as boiler fuel.

TABLE VI

COST OF COAL AND OTHER FUEL

Group	Coal, Oil, Coke per 1,000 c. ft.		1946–7 as percentage of 1938–9	Fuel Costs percentage of Total Revenue	
	1938–9 d.	1946–7 d.		1938–9	1946–7
1.	17·93	35·33	197	42·8	55·1
2.	19·71	39·01	198	41·8	55·2
3.	17·69	35·28	199	37·6	51·2
4.	17·27	34·93	202	37·7	50·9
5.	19·17	35·46	185	36·0	49·0
All undertakings	18·24	35·94	197	41·5	54·1

[1] "Other income" includes net proceeds of sale and hire of equipment, proceeds from meter rents, rents of property, interest on investments held by the undertaking, etc.

There does not appear to be any significant difference between the groups in the actual level of coal and other fuel costs per unit. As a percentage of the total revenue, they tend to fall as the size of undertakings falls, in the same way as manufacturing costs. This is because distribution and general and other fixed costs, and capital charges tend to be proportionately more important in the smaller undertakings. Thus coal oil and coke costs in 1938-9 were 42·8% of the total in Group 1, but only 36·0% in Group 5. In 1946-7 they were 55·1% in Group 1, and 49·0% in Group 5.

The changes in the level and proportion of manufacturing costs which we have already considered will be seen to be largely explained by changes in the cost of coal and other fuel Coal and fuel in both years accounted for between 70% and 75% of all manufacturing costs. Already in 1938-9 they absorbed about 40% of the total revenue, and by 1946-7 this had risen to over 50%. Measured per unit of output coal and other fuel costs had nearly doubled between the two years, showing an average increase of 97% compared with 92% for manufacturing costs. It is noticeable that the increase in Group 5 is only 85%, considerably below the other groups, as was the case with total unit manufacturing costs also.

Thus the main explanation of the big increase of manufacturing costs lies in the cost of coal. There are two main reasons why this increase of manufacturing costs did not give rise to a larger increase in gas prices. First, because the increases of gas output led to a spreading of the fixed costs of distribution and administration, together with interest and repayment charges on capital, over a larger number of units, to which we must add the actual reduction in capital charges resulting from progressive repayment of debt. Secondly, because of increased proceeds from residuals, which tended to offset the increased cost of coal and other fuel.

A more detailed analysis of the effects of charges in the cost of coal is made difficult by differences of gas-making technique. Between 1939 and 1947 there was a considerable extension of the manufacture of carburetted water gas, using coke and gas oil. The cost of gas oil was reduced through the

operation of a government subsidy. This and other technical factors affect the amount of gas made per ton of coal used. Then account must be taken of variations in the quantity of gas unaccounted for through leakage and evaporation, and of gas used on the works, before arriving at the quantity of gas actually sold.

Full information from all the undertakings considered is not available on all these points, but we have enough to throw some light on the nature of the increase of coal costs.

Taking all the undertakings for which information is available, the total of coal carbonised increased by 25%. This figure is reduced because one of the largest undertakings actually used less coal in 1946-7 than in 1938-9, because of increased use of water gas and purchase of gas from coke ovens. If this undertaking is omitted the total of coal used shows an increase of 37%. This corresponds very closely with the overall increase of 36% in quantity of gas sold. These figures would suggest that there was little difference between the two years in the average quantity of gas sold per ton of coal carbonised.

Let us consider first gas made per ton of coal—*i.e.* without allowing for gas unaccounted for or used in works. For this the figure for 1946-7 expressed as a percentage of 1938-9 varies between undertakings from 88 to 150. In most cases however, it lies between 90 and 110, suggesting that there is not a great difference between the years as far as efficiency of gas manufacture is concerned. The percentage of gas made which is unaccounted for—*i.e.* lost through leakage and evaporation, varies considerably between undertakings. In some cases it is higher in 1946-7 than in 1938-9, in others lower. Taking all the undertakings together, for which figures are available, gas unaccounted for averages between 6 and 6½% of the make in both years, which suggests little change in this factor. Similarly the average for all undertakings for which details are available of gas used in the works shows little change between the two years, being 1·5% of the make in 1938-9 and 1·7% in 1946-7.

Apart from the increased manufacture of water gas, therefore, the evidence suggests that changes in gas-making technique and efficiency had little effect on costs of fuel per unit of gas sold.

The average price per ton of coal shows great variations between undertakings. The range in 1938-9 was between 20/7 and 35/3, and in 1946-7 between 42/10 and 60/11. The main factor in both years seems to be transport cost, since those undertakings with the highest prices are those which are furthest from the coal-fields. The weighted average price per ton, for those undertakings for which information is available, works out at 22/9 in 1938-9, and 47/3 in 1946-7.

The increase of coal price between the two years also varies. 1946-7 prices as a percentage of 1938-9 range from 173 to 267, but all but two or three lie between 180 and 220, and most of them between 200 and 220. There is a tendency for those undertakings which have high coal prices owing to transport costs to show a smaller increase than those with low coal prices. The weighted average price for all available undertakings in 1946-7 is 208% of 1938-9—*i.e.* on the average coal prices were rather more than double. This corresponds closely to the average increase of 97% in coal and other fuel costs per unit of gas sold.

The rise in the price of coal is thus the chief reason for the increase of manufacturing costs per unit. Coal and other fuel accounted for between 70 and 75% of the total of manufacturing costs, and a doubling of coal prices was accompanied by a 92% increase on the average, in the cost of manufacturing each thousand cubic feet of gas sold.

IV. Labour Cost.

A detailed analysis of the other elements that go to make up the manufacturing costs is not possible owing to the different methods of classification adopted by each undertaking. Some information is available, however, about the two main distinguishable items, apart from the cost of coal, namely wages of labour employed in coal carbonising, and the cost of repair and

maintenance of plant.[1] Unfortunately no comprehensive estimate of labour costs is possible, since cost of labour is included in several other items—*e.g.* coal costs include the cost of handling coal, and repair and maintenance includes both labour and materials. The details of carbonising wages and repair and maintenance costs are as follows :—

TABLE VII

COST OF CARBONISING WAGES AND REPAIR AND MAINTENANCE—AVERAGE OF 38 UNDERTAKINGS

	d. per 1,000 c. ft.		1946-7 as percentage of 1938–9	As percentage of Total Revenue		As percentage of Manufacturing costs	
	1938–9	1946–7		1938–9	1946–7	1939	1947
Carbonising wages	1·84	3·13	170	4·2	4·7	7·3	6·5
Repair and maintenance...	3·92	6·56	167	8·9	9·9	14·6	12·9

The cost per unit of gas sold of these two items rose by about 70% between 1939 and 1947, whereas unit cost of coal and other fuel rose by 97%. Hence although both carbonising wages and repair and maintenance accounted for a slightly larger proportion of total revenue in 1946-7 than in 1938-9, they formed a smaller proportion of manufacturing cost in the latter year, owing to the much greater increase in the cost of coal.

Thus the smaller increase in the unit cost of these items tended to effect to some extent the increased cost of coal, so that total unit manufacturing costs increased on the average by only 92% (instead of 97%).

Differences of compilation of the figures between undertakings make it undesirable to attach too much weight to the group averages for these items, which are given in the Appendix. It is worth pointing out, however, that the unit cost of

[1]The balance of manufacturing costs includes cost of purification, salaries of officials at the works, and cost of water, electricity and other materials not included in fuel.

carbonising wages appears to be markedly higher in the smaller undertakings in both years—*e.g.* 1939—Group 1—1·83d.; Group 2—1·60d.; Group 3—1·87d.; Group 4—2·16d.; Group 5—2·41d.; 1947—Group 1—3·04d.; Group 2—3·13d.; Group 3—3·01d.; Group 4—3·26d.; Group 5—4·47d. On the other hand unit repair and maintenance costs tend to be highest in Group 1—*i.e.* for the largest undertakings.

V. Overhead Costs.

We have seen above that the effect on the price of gas of the increase of manufacturing costs was partly offset by the fact that an increase in fixed costs of distribution and administration was spread over a larger output so that these items did not increase per unit. Taking the weighted average of all undertakings, distribution and general costs were 11·86d. per thousand cubic feet of gas sold in 1938-9, and 11·64d. in 1946-7, or 98% of the pre-war figure. As a proportion of total revenue, they averaged 27·0% in 1938-9, and only 17·5% in 1946-7. Taking the group averages, we found that the unit cost of these items tended to be higher in the smaller undertakings, suggesting that the advantages of scale were in operation.

Any attempt to break down this category into smaller groups once again comes up against the difficulty of varying methods of classification between undertakings. In particular there is no uniformity in the treatment of the costs of meter reading and meter collection, some undertakings regarding them as part of the cost of distribution and others as an administrative expense. It has been possible, however, to distinguish two main classes of distribution costs and general costs, which together make up most of the total of the combined category used so far. The balance unaccounted for consists mainly of the cost of the supply of consumers' appliances, such as cookers and fires, where these are not covered by the proceeds of the sale and hire of such equipment. Full details are given in the Appendix. Under the heading of distribution costs are included the cost of the unkeep of mains, fittings, and meters, and of the regulation of the flow of gas, and in most

cases, the cost of meter reading also. Under general costs are included costs of administration, including usually the issue and collection of accounts, and such overheads as superannuation and national insurance.

TABLE VIII

DISTRIBUTION COSTS AND GENERAL COSTS—
OVERALL AND GROUP AVERAGES

Distribution Costs :— Group	1938–9 d.	1946·7 d.	1946–7 as percentage of 1938–9	As a percentage of Total Revenue	
				1938–9	1946–7
1.	5·54	5·34	96	13·2	8·3
2.	4·38	5·54	126	9·3	7·8
3.	4·05	4·76	118	8·6	6·9
4.	4·46	6·12	137	9·7	8·9
5.	4·80	5·74	120	9·0	7·9
Overall Average	5·11	5·38	105	11·6	8·1
General Costs :— Group					
1.	5·18	5·16	99	12·4	8·0
2.	6·03	5·92	98	12·8	8·4
3.	7·06	7·00	99	15·0	10·2
4.	6·45	7·65	119	14·1	11·1
5.	7·71	7·90	102	14·5	11·9
Overall Average	5·69	5·76	101	12·9	8·7

Taking first the overall averages, we see that comparing 1946-7 with 1938-9 there was a slight increase in distribution costs per unit and an even smaller increase in general costs per unit, while each of them accounted for a considerably smaller proportion of total revenue.

The group analysis shows an interesting contrast between the two types of cost. Unit distribution costs do not appear to be much affected by the size of the undertaking. In 1938-9

the average is actually lower for the smaller undertakings than for the larger. In 1946-7 it is more markedly higher, especially in Groups 4 and 5, which show an increase of 37% and 20% respectively, while Group 1 shows a decrease of 2%. This suggests that it has been less possible in the smaller undertakings to offset rising costs by increased economies of scale.

On the other hand the average level of unit general costs in both years is considerably higher for the smaller undertakings than for the larger. These costs also account for a larger proportion of total revenue in the smaller undertakings. But in all cases, irrespective of size of undertaking, the level of unit general costs shows little difference between 1938-9 and 1946-7. Thus it is in the spreading of the overhead costs of administration that the large undertaking appears to have the greatest advantage, and in which there is the most scope for the offsetting of rising costs by increased output.

As we have already seen, this applies even more to capital charges, the unit cost of which tends to rise markedly as the size of undertaking falls, but has been greatly reduced, in part by the reduction in the actual size of the annual charge, but mainly by its being spread over a larger volume of gas sales.

Taking all the 38 undertakings together, the actual amount spent on interest and repayment of capital in 1946-7 was only 87% of the figure for 1938-9. 22 of the undertakings showed a reduction of capital charges, and their figure for 1946-7 was 71% of 1938-9. 16 undertakings showed an increased charge, and for them the average was 118%. On the whole, therefore the tendency was for the actual level or capital charges to be lower in 1946-7 than in 1938-9, owing to repayment of debt in excess of new borrowing, but there were many undertakings for which this was not so. At the same time, all the undertakings showed an increase of gas sold of varying amounts, the increase for all 38 taken together amounting to 36%. Thus the cost of capital charges per thousand cubic feet was lower even when the actual capital charges was higher, and was still further reduced where it was lower. The overall average for unit capital charges in 1946-7 was only 63% of the 1938-9 level.

VI. Income from Residuals.

Finally, the effect of the increased cost of gas-making is to a large extent offset by the increased income from the sale of residuals. Residuals revenue per unit of gas sold in 1946-7 averaged 205% of 1938-9 while fuel cost averaged 197%. The extent to which the cost of coal and other fuel was recovered is illustrated below.

TABLE IX

FUEL COSTS AND RESIDUALS REVENUE

Pence per thousand cubic feet of gas sold

	Cost of Coal, etc.	Revenue from sale of			Residual Revenue as percentage of coal, etc. cost %
		Coke	Tar Ammonia & Benzol, etc.	All Residuals	
1938-9					
Group 1.	17·93	7·41	2·01	9·42	52·5
2.	19·71	8·80	2·84	11·64	59·1
3.	17·69	8·14	2·94	11·08	62·6
4.	17·27	7·11	2·02	9·13	52·9
5.	19·17	9·56	2·04	11·60	60·5
Total	18·24	7·76	2·27	10·03	55·0
Group 1.	35·33	15·25	4·59	19·84	56·2
2.	39·01	16·89	5·54	22·43	57·5
3.	35·28	17·23	5·34	22·57	64·0
4.	34·93	15·17	5·70	20·87	59·7
5.	35·46	15·28	3·39	18·07	54·0
Total	35·94	15·75	4·85	20·60	57·3

Taking all the undertakings together we see that for each thousand cubic feet of gas sold, 55% of the cost of coal and other fuel was recovered from the sale of residuals. In 1946-7, 57·3% was recovered, and the percentage also shows an increase in each group except Groups 2 and 5.

Coke is by far the most important of the residual products. Coke sales accounted for over 75% of the residuals proceeds in each year. Taking all the undertakings together, coke

accounted for 17·0% of the total revenue in 1938-9, and 23·7% in 1946-7. These figures are to some extent exaggerated, since it has not been possible to account separately for coke sold and coke used in the works. During 1946-7 there was a subsidy on gas oil, which encouraged increased use of coke and oil in the carburetted water gas process. Thus coke which would otherwise have been available for sale was used for gas-making, along with gas oil, and the amount of coal used was correspondingly reduced. In the published accounts of the undertakings the value of the coke so used is included in the costs of gas manufacture, and also in the total of coke produced. Our figures are thus to some extent a reflection of what the position would have been if the oil subsidy had not encouraged increased production of water gas, when the volume of coke sales would have been greater, but so would the quantity of coal carbonised.

Taking the total of all undertakings for which information is available, the volume of coke actually sold in 1946-7 shows an increase of 28% over 1938-9. Coke prices per ton showed a considerable variation, ranging in 1938-9 from 18/8 to 28/4½, and in 1946-7 from 42/8 to 59/4. In general in those cases where coal prices are relatively high, coke prices are high also. The increase in coke prices varies from 70% to 130%, and on an average it appears that coke prices had approximately doubled, as had coal prices. Coke and coal are substitutes for many purposes, and it is natural that a rise in coal prices should be accompanied by an approximately equal rise in coke prices. Thus the main factor leading to an increase in gas manufacturing costs is to a considerable extent offset by the increased proceeds from the sale of the chief residual product.

VII. Conclusions.

The experience of the 38 undertakings we have considered can be summarised as follows. Between 1938-9 and 1946-7 coal prices were doubled, and the cost of manufacturing a unit of gas doubled too. But because of fuller utilisation of distributive capacity and spreading of overheads over a larger output,

together with greatly increased proceeds from residuals, the price charged for gas increased by only a little over a third.

In addition the following more general conclusions can be drawn.

1. The largest single item in gas-making costs is the raw material, coal. This together with alternative materials such as coke and gas oil, absorbed about 40% of the total revenue in 1938-9, and over 50% in 1946-7. Apart from changes in gas-making technique, coal costs are naturally variable, since coal consumption must vary fairly directly with gas output. Hence the cost of gas-making is very greatly influenced by changes in the price of coal.

2. The proceeds of the sale of residuals partly offset the cost of coal. Since coke, the main residual product, is for many purposes a substitute for coal, its price tends to move in the same direction, so that higher coal prices are compensated for by higher coke prices. Residuals proceeds play a very important part in reducing the price at which gas can be sold. In 1938-9, for instance, the total of working expenses + capital charges for thousand c. ft. of gas sold averaged 42·90d., whereas the actual average price per thousand c. ft. was 32·82d., and the contribution of residuals 10·03d. In 1946-7 the corresponding figures were 63·69d., 44·76d. and 20·60d.

3. Within the range of size of undertakings we have considered, there is not much evidence of any great advantages of large scale production so far as manufacturing costs are concerned. The position of Group 5 seems slightly less favourable than the others, and that of Group 1 slightly more favourable but the differences are not great. In distribution costs also, the larger undertakings do not seem to have any advantage, since presumably the costs of distribution, and especially the upkeep of mains and equipment, tend to increase in proportion to the size of the undertaking.

4. The economies of scale apply most clearly in the case of the administrative and other overhead costs which we have included under the heading "General," and in the case of

capital charges. In both these categories cost per unit rises progressively as the size of the undertaking decreases.

It is in the administrative and general costs, and in capital charges that the greatest scope for economy has arisen over the war period, through the spreading of fixed costs over a larger output. In this case the economies of fuller use of capacity have been shared by distribution costs also, since a larger volume of gas sales have been obtained from the same distribution network. Hence in spite of the rise in wages and the cost of materials, distribution and general costs per unit have remained unchanged. Capital charges per unit have been greatly reduced, mainly by being spread over a larger output, but in most cases also because of a reduction in the total annual charges through progressive repayment of debt.

Municipal Gas Undertakings have thus shared in that improvement of the Load Factor which has been such a marked feature of public utility operation over the war period. The great part played by coal costs has reduced the scope for this increased spreading of fixed costs, but this has been offset by the rise in coke sales and prices. The Gas Industry has been fortunate in that its two main products are to a large extent substitutes for its chief raw material.

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APPENDIX A

COST AND REVENUE PER THOUSAND CUBIC FEET OF GAS SOLD
1938–9 and 1946–7

	Manufacturing Costs					Distribution and General Costs						Residuals					
	Coal Oil Coke	Carbonising Wages	Repair and maintenance	Other (1)	Total	Distribution	General	Other (2)	Total	Total Working Expenses	Capital Charges	Sale of Gas	Coke	Other (3)	Total	Other Items (4)	Total
1938–9	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Group 1.	17.93	1.83	4.11	1.26	25.13	5.54	5.18	1.08	11.80	36.96	4.70	31.79	7.41	2.01	9.42	0.70	41.91
2.	19.71	1.60	3.32	1.30	25.93	4.38	6.03	0.91	11.32	37.25	7.02	33.59	8.80	2.84	11.64	1.90	47.14
3.	17.69	1.87	3.76	1.51	24.83	4.05	7.06	1.29	12.40	37.25	7.20	34.48	8.14	2.94	11.08	1.55	47.10
4.	17.27	2.16	3.64	1.73	24.80	4.46	6.45	1.27	12.18	36.99	6.89	34.70	7.11	2.02	9.13	2.01	45.85
5.	19.17	2.41	3.85	2.71	28.14	4.80	7.71	0.57	13.08	41.20	8.75	39.22	9.56	2.04	11.60	2.53	53.32
All undertakings	18.24	1.84	3.92	1.34	25.34	5.11	5.69	1.06	11.86	37.20	5.70	32.83	7.76	2.27	10.03	1.13	43.99
1946–7																	
Group 1.	35.33	3.04	6.66	2.58	47.61	5.34	5.16	0.41	10.91	58.52	3.07	43.73	15.25	4.59	19.84	0.53	64.10
2.	39.01	3.13	6.69	2.04	50.87	5.54	5.92	0.67	12.13	63.03	4.80	46.50	16.89	5.54	22.43	1.73	70.67
3.	35.28	3.01	6.28	4.78	49.35	4.76	7.00	1.04	12.80	62.15	3.50	44.85	17.23	5.34	22.57	1.54	68.92
4.	34.93	3.26	5.62	3.30	47.11	6.12	7.65	0.25	14.02	61.14	4.41	46.02	15.17	5.70	20.87	1.76	68.63
5.	35.46	3.47	6.63	4.79	50.35	5.74	7.90	0.09	13.73	64.08	5.22	50.23	15.28	3.39	18.67	3.40	72.34
All undertakings	35.94	3.13	6.56	2.90	48.46	5.38	5.76	0.50	11.64	60.10	3.48	44.75	15.75	4.85	20.60	1.05	66.40

Notes : (1) Includes cost of purification, salaries at works, and materials such as water and electricity.

(2) Includes cost of sale, hire, and maintenance of appliances, where this exceeds revenue, and cost of maintaining public lamps.

(3) Includes revenue from sale of tar, ammonia, benzol, and spent oxide.

(4) Includes net revenue from sale and hire of appliances, meter rents, rents from let property, and interest receipts.

APPENDIX B

COST AND REVENUE PER THOUSAND CUBIC FEET

1946–7 as a percentage of 1938–9

	Manufacturing Costs					Distribution and General Costs						Residuals					
1938–9	Coal Oil Coke %	Carbonising Wages %	Repair and maintenance %	Other (1) %	Total %	Distribution %	General %	Other (2) %	Total %	Total Working Expenses %	Capital Charges %	Sale of Gas %	Coke %	Other (3) %	Total %	Other Items (4) %	Total %
Group 1.	197	166	162	205	189	96	99	38	92	158	65	138	206	228	211	76	153
2.	198	196	202	157	196	126	98	67	107	169	68	138	192	195	193	91	150
3.	199	161	167	317	199	118	99	81	103	167	49	130	212	182	204	99	146
4.	202	151	154	191	190	137	119	20	115	165	64	133	213	282	229	86	150
5.	185	185	172	171	179	120	102	16	105	156	60	128	160	166	160	134	136
All undertakings	197	170	167	216	191	105	101	47	98	162	61	136	203	214	205	93	151

Notes : (1), (2), (3), (4).
See notes to Appendix A.

APPENDIX C

COST AND REVENUE AS PERCENTAGES OF TOTAL REVENUE
1938–9 and 1946–7

	Manufacturing Costs					Distribution and General Costs						Residuals					
1938–9	Coal Oil Coke %	Carbonising Wages %	Repair and maintenance %	Other (1) %	Total %	Distribution %	General %	Other (2) %	Total %	Total Working Expenses %	Capital Charges %	Sale of Gas %	Coke %	Other (3) %	Total %	Other Items (4) %	Total %
Group 1.	42.8	4.4	9.8	3.0	60.0	13.2	12.4	2.6	28.2	88.2	11.2	75.9	17.7	4.8	22.5	1.7	100
2.	41.8	3.4	7.0	2.8	55.0	9.3	12.8	1.9	24.0	79.0	14.9	71.3	18.7	6.0	24.7	4.0	100
3.	37.6	4.0	8.0	3.1	52.7	8.6	15.0	2.7	26.3	79.1	15.3	73.2	17.3	6.2	23.5	3.3	100
4.	37.7	4.7	7.9	3.8	54.1	9.7	14.1	2.8	26.6	80.7	15.0	75.7	15.5	4.4	19.9	4.4	100
5.	36.0	4.5	7.2	5.1	52.8	9.0	14.5	1.1	24.6	77.3	16.4	73.6	17.9	3.9	21.8	4.7	100
All undertakings	41.5	4.2	8.9	3.0	57.6	11.6	12.9	2.5	27.0	84.6	13.0	74.6	17.6	5.2	22.8	2.6	100
1946–7																	
Group 1.	55.1	4.7	10.4	4.1	74.3	8.3	8.0	0.7	17.0	91.3	4.8	68.2	23.8	7.2	31.0	0.8	100
2.	55.2	4.4	9.5	2.9	72.0	7.8	8.4	1.0	17.2	89.2	6.8	65.8	23.9	7.8	31.7	2.4	100
3.	51.2	4.4	9.1	6.9	71.6	6.9	10.2	1.5	18.6	90.2	5.1	65.1	25.0	7.7	32.7	2.2	100
4.	50.9	4.8	8.2	4.7	68.6	8.9	11.1	0.4	20.4	89.1	6.4	67.1	22.1	8.3	30.4	2.6	100
5.	49.0	6.2	9.2	5.2	69.6	7.9	10.9	0.2	19.0	88.6	7.2	69.4	21.1	4.7	25.8	4.7	100
All undertakings	54.1	4.7	9.9	4.3	73.0	8.1	8.7	0.7	17.5	90.5	5.2	67.4	23.7	7.3	31.0	1.6	100

Notes : (1), (2), (3), (4).
See notes to Appendix A.

The Government of Haslingden

A previous article [1] described the economic structure of Haslingden and discussed the problems which face the borough as a result of the changing fortunes of the cotton industry. The heavy concentration on cotton, advantageous under nineteenth century conditions, is a source of weakness to-day in the absence of any assurance that the present high demand for cotton goods will be maintained. The efforts made by the Borough Council to exert some influence on the economic future of their town have thus far proved ineffectual.

This was, however, an adventure in a field where the legal powers of a non-county borough are small. Has Haslingden had any better success in fields which have been and still are under the direction of its own elected representatives?

This question could not be answered fully except by a detailed study of the local politics and administration of Haslingden, a study which has not been undertaken; but enough material is available to indicate in outline what has happened. The plan of this article is to deal *first* with Town and Country Planning, in which, until the Act of 1947, the initiative lay with the Borough, and *secondly* with Housing, where lies the largest field of positive action still open to a non-county borough. It will proceed, *thirdly*, to consider the position of the Borough in relation to the services transferred to the County Council and administered by it through schemes of decentralisation; and will deal, *finally*, with the attempts made to regain some control over local fortunes by voluntary incorporation in some larger local unit.

It may be useful to note at the outset the powers which have been lost by the Borough in recent years as a result of legislation.[2] Haslingden has ceased to be the Authority for Elementary Education, Town and Country Planning, Fire Prevention, Maternity and Child Welfare, Ambulances and

[1] "Haslingden: A Problem in Balance," *Manchester School*, Sept., 1949.

[2] Education Act, 1944. National Health Service Act, 1946. Fire Service Act, 1947. Town and Country Planning Act, 1947.

Electricity. The financial effect of this transfer of Major Services to the County Council is a substantial increase in the proportion of the General Rate allocated for County purposes.[1] This precept increased from 46·6% of the General Rate in 1938-39 to 58·4% in 1948-49, *i.e.* from 6s. 4d. out of 13s. 9d. to 11s. 4d. out of 19s. 6d.

The following tables illustrate Haslingden's position as one of the five smallest non-county boroughs in Lancashire.

TABLE I

Town	Population	Acreage	Rateable Value
Mossley	10,470	3,624	£44,736
Clitheroe	10,940	2,385	£71,942
Haslingden	14,540	8,195	£85,572
Bacup	18,120	6,121	£90,275
Colne	20,840	5,939	£131,328

TABLE II

	1938–39					1948–49					
Borough	Rate in £	Borough	%	County	%	Rate in £	Borough	%	% Decrease	County	%	% Increas
Mossley ...	14/–	7/1·77	51·1	6/10·23	48·9	17/6	5/6·53	31·7	19·4	11/11·47	68·3	19·4
Clitheroe	12/6	7/0·4	56·3	5/5·6	43·7	18/9	7/4·0	39·1	17·2	11/5·0	60·9	17·2
Haslingden	13/9	6/6·98	47·9	6/4·98	46·6	19/6	6/10·78	35·4	12·5	11/4·57	58·4	11·8
Bacup ...	13/10	7/7·11	54·9	5/5·28	39·3	19/6	7/1·929	36·7	18·2	11/4·27	58·2	18·9
Colne ...	14/6	9/0·44	62·3	5/5·28	37·5	19/–	7/7·46	40·1	22·2	13/0·27	68·5	31·0

[1]See Appendices A and B for division of function between County Council and Borough Council, and for details of General Rates.

TOWN AND COUNTRY PLANNING.

To exercise the powers conferred by the Act of 1932, Haslingden, Bacup and Rawtenstall combined to form the Rossendale Regional Planning Committee. This Committee was launched in the unfortunate economic circumstances of the depression; it remained formally in existence until 1st January, 1949, when it lapsed as a result of the 1947 Act, but it had been inactive for a long time. Accordingly, during the war the Haslingden Council decided to act independently, and in 1942 it engaged a distinguished Planning Consultant to prepare a Development Plan. This must have been one of the first enterprises of its kind in the country, and its initiation shows that the Council and its officials had energy and foresight as well as civic pride.

The Plan had three objectives. *First*, it was to secure a better balance of industry within the town. This is the only hope of raising the town to an optimum size, and, among the measures to be adopted to secure it, was the establishment of two trading estates. *Secondly*, it was to provide for an increase in the population of the town to about 30,000 people, a limit fixed by physical and planning considerations. The *third* objective was to preserve the identity of Haslingden and to retain local autonomy as far as possible.

The Plan was intended to place in coherent relation to these objectives the physical aspects of the development of Haslingden; the siting of public, industrial and residential buildings, of schools and hospitals, and of roads and other transport facilities.

A fresh situation has been created by the Act of 1947. The local Council hope that their own plan will to a large extent be incorporated in the Development Plan to be formulated by the Lancashire County Council, but the final decision is now outside their control. It may be that separate local plans fit badly into wider conceptions, and that there is good administrative ground for centralisation. But in the process there is lost the opportunity which small towns previously possessed of earning some reward in competition with their neighbours by superior energy, foresight and local patriotism.

There are, however, certain drawbacks in official planning, even on a small scale, which can be illustrated by one incident in the history of the Haslingden Plan.

A piece of land, zoned as part of the Green Belt, had been considered by a local engineering firm as a site for expansion. This had great potential advantages for the town, since it was proposed to concentrate in the town works then situated in Haslingden and Blackburn ; apart from this expansion in the engineering industry, the engineers' families might help to staff the cotton mills. The land in question adjoins the main Manchester road, and there were perhaps tenable aesthetic reasons against the erection of an engineering works. When, however, the physical configuration of Haslingden is taken into consideration and the paucity of level sites is contrasted with the extensive tracts of moorland forming a natural Green Belt on three sides of the town, aesthetic considerations may become of secondary importance. Nevertheless, the Planning Consultant was adamant in his decision regarding the Green Belt, and the application was in the first instance turned down. The Council ultimately repented, as the following minute[1] shows :—

> "The Committee considered the implication of the proposals for the retention of a "Green Belt" by the sterilisation of land at Bent Gate for industrial or residential purposes.
>
> *Resolved* : that the Planning Consultant be informed that it is the opinion of the Committee that the land now mentioned at Bent Gate could be utilised for industrial purposes without deleterious effect and that he be requested to reconsider his proposals with reference to the land in question."

But it was now too late : the engineering firm had abandoned the project.

HOUSING.

Housing is the one major service in which the initiative still rests with the Borough Council. The Council's action is subject

[1]Housing and Town Planning Committee, 30th June, 1943.

to control by different Ministries, but the rate of house completion still largely depends on local energy and efficiency, and good housing may be of great importance to the future of a town.

The slow rate of progress in Haslingden has been a matter for widespread criticism locally. Between November, 1945, when the Council was first authorised to invite tenders, and 31st March, 1949, 46 houses had been completed by the Local Authority. This compares unfavourably with a pre-war year, such as 1938, when 57 new houses were built, 32 by the Local Authority and 25 by private enterprise. The Housing Returns and the Report of a Building Zone Conference held in February, 1947, supply an interesting record of housing progress in Haslingden and other areas.

During the war the Council had reviewed the Housing needs of the Borough in the light of the outstanding programmes for slum clearance and abatement of overcrowding and of the probable demand for new houses from members of the Forces. Two post-war building programmes were drawn up :—

1st Year :	100	3 bedroomed houses
	47	2 „ „
	147	
2nd Year :	12	bungalow type for aged people
	90	2 bedroomed houses
	40	parlour-type, 3 bedroomed houses
	130	non-parlour type, 3 bedroomed houses
	272	

Similar programmes throughout the country produced a total which was quite out of relation to national resources, and early in 1947 the Ministry of Works introduced a system of Zone Conferences in order to relate building plans to resources in particular areas.

The following estimate was made of the labour employed in house building, conversion and repair in Zone 6 in February, 1947 :—

TABLE III*

ESTIMATE OF LABOUR EMPLOYED, FEBRUARY, 1947—NOT INCLUDING LOCAL AUTHORITY DIRECT LABOUR

	Local Authority New Dwellings	Temporary Housing	Licensed Conversions and Adaptations	£10/£100 L.A. Licences
Burnley C.B. ...	228	—	46	143
Burnley R.D. ...	12	—	30	58
Bacup	86	25	6	31
Accrington ...	201	—	26	84
Haslingden ...	24	16	—	54
Rawtenstall ...	105	25	6	45
Colne	3	—	15	25
Nelson	—	18	18	98
Padiham	45	—	5	26
Trawden	—	—	—	10
Brierfield	27	—	—	23
Barrowford ...	32	—	—	20
TOTALS ...	763	84	152	617

* North-Western Region Building Committee; Zone Conference, Feb., 1947.

This gives a total of 1,616; in addition, 1,421 were employed on projects authorised by Government Departments or licensed to a value of more than £100 by the Regional Licensing Office of the Ministry of Works.

The representative of the Ministry of Health commented on the small labour force employed on housing in this Zone as compared with other Zones, stating that, from the figures available, it was estimated that only 37% were employed on housing. This fell far short of the Government aim; "The Government policy in 1946 has been to assign roughly 60% over-all of the labour resources of the building industry to

housing, and it is their intention that approximately this division shall remain in 1947." [1] At the conference it was estimated that, over the Zone as a whole there were about 1,800 men who were not accounted for and were presumably employed on works neither licensed nor approved. In Haslingden insured persons in Building and Contracting in July, 1946, numbered 248 ; Table III shows 94 employed on housing work in February, 1947, *i.e.* about 38%. Some allowance must be made for housing projects of a value of more than £100, licensed by the Ministry of Works, but even this qualification leaves a considerable number of building operatives in Haslingden unaccounted for.

It was felt at the conference that in submitting programmes to the Ministry of Health some Authorities had overestimated their resources of labour and materials, and certain modifications were accordingly made. Nevertheless, progress figures for subsequent dates show that the number of houses completed by the end of 1947 was, in most cases, considerably less than even the revised figures, except at Accrington.[2]

In Table V the number of houses completed (*a*) on 31st May, 1948, and (*b*) on 31st March, 1949, is related to the estimated population at mid-1939. This comparison per head of population reveals a very slow rate of progress in Haslingden, both in relation to the country as a whole and to other towns in the North-West Region. A visiting speaker from the Central Office of Information who visited Haslingden in May, 1949, suggested that if the town had not been given its proper share of the houses allocated to textile areas it must have been because the Local Authority had not put sufficient pressure on the powers that be ; and Alderman Boyson admitted that much more could have been done.[3]

[1] Housing Programme for 1947, Cmd. 7021, para. 8.

[2] See figures in Table IV. The Accrington figures include 252 "Easiform" houses, *i.e.* permanent pre-fabs., and Accrington was also given a certain priority for mining.

[3] *Vide* the local *Observer*, 7th May, 1949.

TABLE IV

	SITES		Housing Authorities and Housing Associations—Permanent Housing			Housing under Licence—Permanent Housing		
	Possession obtained; development or house erection not yet begun	Developed or under development; house erection not yet begun	No. of tenders approved	No. under construction	Completed	Total No. of Licences issued	Under Construction	Completed
Burnley C.B.								
31st Mar., 1946	1,212	—	236	54	—	6	—	—
31st Dec., 1947	1,000	18	392	212	116	72	27	24
31st May, 1948	552	350	398	210	152	73	12	40
31st Mar., 1949	462	380	458	153	276	89	20	52
Bacup								
31st Mar., 1946	—	138	44	28	—	—	—	—
31st Dec., 1947	46	30	154	116	28	3	1	2
31st May, 1948	46	30	154	102	52	3	1	2
31st Mar., 1949	46	26	158	54	104	3	—	3
Accrington								
31st Mar., 1946	4	194	183	80	4	10	—	—
31st Dec., 1947	104	12	581	178	261	43	14	24
31st May, 1948	56	116	581	178	341	43	10	29
31st Mar., 1949	—	116	715	128	513	63	15	37
Haslingden								
31st Mar., 1946	—	44	—	—	—	—	—	—
31st Dec., 1947	20	46	44	28	16	6	6	—
31st May, 1948	—	46	64	32	32	6	6	—
31st Mar., 1949	—	—	110	38	46	9	6	2
Rawtenstall								
31st Mar., 1946	—	162	2	2	—	7	—	—
31st Dec., 1947	90	56	200	116	36	9	2	1
31st May, 1948	—	139	207	108	76	9	—	3
31st Mar., 1949	—	77	271	115	154	11	—	3

TABLE V •

	Population at Mid-1939	Permanent Houses completed (excluding aluminium)		House completion per head 1939 population	
		31/5/1948	31/3/1949	31/5/1948	31/3/1949
Burnley ...	87,000	192	328	1 : 453	1 : 265
Bacup	20,000	54	107	1 : 370	1 : 187
Accrington ...	39,000	370	550	1 : 105	1 : 71
Haslingden ...	15,000	32	48	1 : 469	1 : 312
Rawtenstall ...	27,000	79	157	1 : 342	1 : 172
Regions : Northern ...	3,003,100	21,663	36,624	1 : 139	1 : 82
E. & W. Ridings	3,975,700	19,952	31,970	1 : 190	1 : 124
N. Midlands ...	3,065,100	24,310	38,629	1 : 126	1 : 71
Eastern	2,691,400	24,456	38,243	1 : 110	1 : 70
London ...	8,746,500	37,072	64,003	1 : 236	1 : 136
Southern ...	2,317,400	20,507	31,576	1 : 113	1 : 73
S. Western ...	2,672,700	19,459	30,216	1 : 137	1 : 88
Wales	2,465,200	13,244	22,704	1 : 186	1 : 109
Midlands ...	3,986,500	29,266	44,343	1 : 136	1 : 81
N. Western ...	6,236,500	32,550	51,759	1 : 192	1 : 121
S. Eastern ...	2,299,900	19,035	30,704	1 : 121	1 : 75
Total : England and Wales ...	41,460,000	261,514	420,771	1 : 159	1 : 99

N. Western Region includes Cheshire, Lancashire and the High Peak District of Derbyshire.

•Housing Return for England and Wales, 31/5/'48 ; Cmd. 7442 & Appendix B
do. 31/3/'49 ; Cmd. 7681 & Appendix B

Yet there is no disagreement about the special urgency of housing in the North-Western and Yorkshire Regions, where the availability of houses might be a powerful factor in retaining

labour in the cotton and woollen textile industries, and even of bringing in new labour : and this is fully appreciated in Haslingden. The Chairman of the Employment Committee is reported to have said that many young couples who might have helped to solve the labour problem were emigrating from the district because of the acute housing shortage. "Many people have left Haslingden in the last sixteen months just because they cannot get a house."

Haslingden has therefore failed here, and it is not by any means alone in this among the smaller Local Authorities in the North-West. It is not possible to assess how far this has been due to factors outside local control : certainly the local critics (who are very vocal) are not agreed on any single explanation. In some quarters the Government is blamed :[1] "The Government is giving priority to mining and agricultural areas instead of transferring all available material to textile areas." "Government restrictions on house-building have held up the erection of twelve old people's bungalows." "It is the Ministry of Labour's job to find us the bricklayers, so that we can get on with the job of building houses." Others blame the contractors : "There appears to be no co-ordination or co-operation between contractors responsible for houses." Shortages of materials are alleged : "The real difficulty has not been in building houses, but in securing the installation of interior fittings, which, along with other materials, are in short supply." The Council is blamed for "lack of enthusiasm and lack of virility." Finally the public itself is blamed for theft and damage.

The causes of failure are uncertain : its effects are not. Here is an extract from the report for 1948/49 of Haslingden's Medical Officer of Health :[2]

> An infantile mortality rate at Haslingden double the national average and a general death rate 50 per cent. higher is shown in the annual report of the town's Medical Officer of Health issued yesterday.

[1]Extracts from reports of Council Meetings, etc. (Haslingden *Observer*).
[2]*Manchester Guardian*, 19th Oct., 1949.

The report states that only 43 per cent. of the houses have baths. In addition to 995 houses not fit in any respect for human habitation, there are 274 back-to-back houses, 96 "back-to-earth" houses, 17 cellar dwellings, and 92 single-room houses.

A member of the Town Council told a reporter last night : "A back-to-earth house is underground and differs little from a cellar home except that people do not live under their own coal. The cellar homes, some of which are about 25 ft. below road level, seem to be peculiar to Haslingden.

"In the back-to-back houses the occupants have no back doors and no sanitary arrangements except a common outhouse on the gable end. In one row of tenements they have to walk over fifty yards to five lavatories which are shared by thirty families."

DECENTRALIZATION BY THE COUNTY COUNCIL.

Certain of the Acts transferring Major Services to the County Councils contain provisions for delegation of power to the County Districts.[1] The Lancashire County Council has expressed its willingness to delegate such powers : "The County Districts have been informed that it is the policy of the County Council, in expressing its belief in the two-tier system of Local Government, to delegate to the County Districts, as far as is reasonable and practicable, its various powers in relation to services." (Report of the Parliamentary Committee of the County Council, 6th February, 1947).

Effective administration has required the grouping of County Districts in order to secure a certain minimum of population, which varies with the nature of the service. Probably economic and geographical considerations are more important than population in delimiting suitable areas for Town and Country Planning : but for primary and secondary education the minimum population suggested is 60,000, for further education it is 300,000, for health services it is 100,000.[2]

[1]Education Act, 1944, National Health Service Act, 1946, Town and Country Planning Act 1947.

[2]Lancashire County Council's Three Ridings' Report, para. 39.

Existing divisional areas do not conform closely to these standards and show wide variations even within particular services. The population of the divisional areas for Education in Lancashire varies from about 22,700 to about 93,400. With one or two exceptions Health Divisions cover populations between 100,000 and 170,000, while Planning Divisions range between 70,000 and 170,000, with two smaller units of 30,000 and 40,000.

Responsibility for local government services in Haslingden is thus now divided between three levels of administration :

(*a*) The County Council.
(*b*) The County District Council, *i.e.* the Borough Council.
(*c*) The Divisional Committees set up to administer specific services.

What effective control does a town such as Haslingden exercise within this structure ? To what extent does the general public participate in control ?

(*a*) *The County Council.* Haslingden elects one of the 120 Councillors elected by the 109 County Districts. Thus Haslingden has a very small voice in the executive decisions on major services which are taken by the County Council. Moreover, it is not likely that the average citizen of Haslingden is well informed about the activities of the County Council, for there have been surprisingly few County Council election contests ; 1934 saw the first contested County Council election in Haslingden since 1892. In 1937 and 1940 the same County Councillor was returned unopposed. There was a bye-election in 1947, when there was a 56% poll, and the election of 1949 was again uncontested.

(*b*) *The Haslingden Borough Council.* As has been shown, the services for which the Borough Council remains autonomous are for the most part minor functions, "largely amenity in character." [1] A good deal of interest has always been taken in local elections. In 1947 Haslingden polled 75·6% of its electorate, the second highest percentage among the Lancashire Boroughs, for which the average was 58% ; in the elections of 1949 there was an average poll of 66·8% in the three wards

[1] Lancashire County Council's Three Ridings' Report, para. 39.

contested out of six. But this active participation has not been reflected in attendance at Public Relations Meetings recently organised by the Borough Council, and it may be no more than a social habit. The Mayor is reported to have said recently at a meeting arranged to discuss the administration of the Health Services : "Judging from the complaints I get, I would have thought that this meeting would have been crowded, but it seems that the public are not interested in what the Local Authority is trying to do. It is a tragedy that so few people should show an interest in local government affairs."

(*c*) *The Divisional Committees for Education, Health and Planning,* Each of these was set up to administer a specific service, and in the first instance to prepare a development plan, for which County approval had to be obtained. The claims of the 35 divisions for education, of the 17 divisions for health and of the 19 divisions for planning will be reviewed by the County, which will decide upon priorities according to *its* assessment of the most pressing local needs. Haslingden's representatives on these committees are nominees of the Council, and, therefore, only indirect representatives of the people. They may represent politically different parties, they have no share in financial control and their indirect election may render them ineffective spokesmen on behalf of local opinion.

Furthermore, Haslingden finds itself in a different grouping of Local Authorities for each of the services, and its representatives have on occasion expressed concern at the lack of community of interest with certain of its divisional partners.[1] The Education Executive, for instance, has had a very rough existence during its first three years. Haslingden, as a Part III authority which had carried through a schools' re-organisation scheme at the beginning of the war, strongly protested at the link-up with Ramsbottom and Tottington, whose schools, it was suggested, were less advanced in their re-organisation. This early resentment was fanned into open opposition over

[1]See Appendix C.

the siting of the new Grammar School to replace the existing building situated in Haslingden. In pre-war days the County had asked the Borough to set aside a site for such a project, and provision was accordingly made at Broadway (Helmshore). When the Divisional Executive was established, the Ramsbottom and Tottington delegates, representing a combined population greater than that of Haslingden, decided by 12 votes to 11 to press the County Education Committee to reverse their decision to build the new school in Haslingden. When the Haslingden Town Council asked for an interview with the County, County Councillor A. Gaskell threatened that the Ramsbottom divisional representatives would resign *en bloc* "rather than have our democratic decisions repudiated through the interference of an outside body." The dispute was eventually terminated by the County deciding that the site offered by Haslingden was the better.

Such wranglings are probably inevitable in the early days of joint administration by local authorities, but, if the system is to work effectively, these local relationships must be taken into consideration when administrative sub-divisions are created. It is also desirable that, when re-organisation is undertaken, some attempt should be made to consolidate the smaller divisional units within the area required as the largest unit of delegation. In a large county, schemes of devolution will not be satisfactory either administratively or politically unless some attempt is made to find a new "all-purpose" unit.

Schemes of Voluntary Amalgamation.

The trend towards the creation of bigger units of local government and the vesting of executive control over Major Services in the County and County Borough Councils has caused some smaller authorities seriously to explore the possibilities of voluntary amalgamation.

Its position at the western end of the Rossendale Valley gives Haslingden ties both with the Accrington area to the north and with the Rossendale towns of Rawtenstall and Bacup to the east. Proposals for amalgamation have been advanced by both areas at various times during the last fifty years,

but negotiations have always been coloured by the fear of losing prestige. Changes in administration over the years have resulted in the centralisation of certain services in Rawtenstall. For example, in 1920 the Haslingden and Bacup County Courts ceased to exist and were merged with the Rawtenstall Court ; more recently, Food Office records have been transferred to Rawtenstall from Haslingden and Bacup. These occurrences, which may appear unimportant in themselves, always create a good deal of local resentment ; authorities become jealous of their rights and suspicious of their neighbours' motives when joint action is proposed.

Such feelings are by no means peculiar to the Rossendale Valley towns. The Local Government Boundary Commission wrote : "It is perhaps inevitable that the official attitude of individual authorities should generally (with some outstanding exceptions) be dictated by one or both of two desires, the first to extend their area or upgrade their status and the second to resist encroachment on the part of their neighbours and to remain undisturbed. It is understandable that some members and principal officers who have for years held responsible positions in a local authority should contemplate with reluctance the possibility of its disappearance as a separate unit." (1947 Report, para. 34.)

The opposition previously aroused in Haslingden by any amalgamation proposal is being weakened, although two distinct sections of opinion have been apparent at recent Council meetings. On the one hand there were those who were anxious for the Councils concerned to take the initiative in drawing up a scheme of merger. On the other hand there were those who advocated the more cautious policy of waiting to see what proposals the Boundary Commissioners would make. A new situation has been created by the dissolution of the Boundary Commission, and it is probable that there will now be some agreement about the advantages of voluntary amalgamation, at least in principle. It makes it possible to choose working partners with whom there is a certain community of sentiment or interest, and it holds out the hope that an

enlarged unit of population will have a strong case for increased powers, by delegation or otherwise.

One suggested scheme of merger has been abandoned : this contemplated the formation of a County Borough of approximately 138,000 people, comprising the Boroughs of Accrington, Bacup, Haslingden and Rawtenstall and the Urban Districts of Church, Clayton-le-Moors, Great Harwood and Rishton with Altham. Two others remain under discussion. One is for an amalgamation between Bacup, Haslingden and Rawtenstall to form a larger non-county borough. The three boroughs would relinquish their separate identities, and, although as a second-tier authority they would have no greater powers than at present, they might be granted *direct* delegation from the County Council outside the existing Divisional Committees. The alternative proposal is for an amalgamation of Haslingden, Bacup, Ramsbottom and Rawtenstall to form a New County Borough of the type envisaged in the Boundary Commission's Report for 1947 (para. 42). With a population of approximately 60,000 the New County Borough would become more directly responsible for Education and Health and would be responsible for preparing the area development plan within the County Council's overall plan.

Conclusion.

This investigation has been too slight to be conclusive, but it suggests two things : first, that in spite of a general desire for constructive action, Haslingden has not been able to make any effective use of the powers left to it : second, that this failure does not seem to have been due to any unusual deficiencies in Haslingden's organisation. It has done in some ways worse, in others better, than other non-county boroughs or urban districts of the same type.

If these conclusions are correct, it seems that there is a large element of sham in the present structure of local government. Haslingden is in theory a self-governing Corporation ; it possesses all the trappings of municipal authority, and we are all taught to believe that this really is *authority*. For the average child "Mr. Mayor" is (next to the Royal Family)

the most conspicuous symbol of public power, and neither the child nor the average adult knows whether he is a "first-tier" or a "second-tier" Mayor. There is little doubt that in the small boroughs membership of the Council still retains its social prestige : borough elections are still well contested and attract a high percentage of voters, at least in areas where there has been a stability of population and a tradition of local feeling. But it seems that in practice the powers of the Council are even less than they are in theory : the citizen *elects* his local council, he is *governed* by the regional representatives of Whitehall, by the County Council, and by its Divisional Executives. The first of these he can influence only at very long range through the machinery of national representation ; on the second his representative is lost in a crowd, and in any case he may well have been elected for years without a contest ; the third are nominated, not elected, bodies, and are in some sense agents of the County Council.

What is likely to follow? If Haslingden is economically unlucky it will lose its younger population steadily, and will dwindle until it is no more than a geographical expression. But the Borough has still a strong sense of continuity and of common interest, and these will not vanish if the economic future permits a stabilisation at the present level of employment, population and prosperity. How are they to be utilised within the present framework of local government ?

One possibility is that the present line of development should be accepted and more consciously followed. It is certain that, with the present structure of politics and administration, final authority cannot be left to the representatives of 15,000 people except within a trivial sphere : but that does not mean that these representatives are unimportant. 15,000 people look very small when seen from Whitehall, but to those who live among them they are a large world, and it is essential that there should be among them some present and visible symbol of democratic government—something a little less bleak than the Food Office, or the Labour Exchange, or even than the primary school. It is not necessary that this symbol should have much legal power, provided that it can attract interest

and focus loyalty. The "Community Councils" of new estates such as Wythenshawe have no legal authority, they are not even formally elected, yet they represent the community and "lobby" in its interests quite as effectively as the average borough council.

This line of thought suggests that the smaller local authorities may become in effect "Community Councils" ; not themselves possessing wide powers, but well placed to press the interests of their constituents upon those who do, and also perhaps vested with discretion to develop such "amenity" services as theatres, restaurants and cinemas. If this solution is to be rejected, the only alternative is amalgamation : but this is never as simple as it seems. The Rossendale area is a good instance of the barriers of sentiment and geography which have to be overcome ; the creation by agreement of a new unit of government is always a difficult adventure, whether it is a matter of United Rossendale or United Europe. In addition, there is an administrative problem to be faced. It has been seen that different services tend to create different areas ; the object of amalgamation is to regain local control of these services, and that is only possible if the amalgamation can cover an area which is one area for all the main services. The way for amalgamation must be made easier by the development of "all-purpose" areas of devolution within the county, and unless a conscious effort is made these areas will not come into existence. Administrators, unless carefully watched, will go quietly on remaking the map to suit their own different conveniences.

This second solution therefore is the more difficult : it requires not only complex negotiation among the minor authorities concerned, but also some foresight and sympathy from above : now that the Boundary Commission has gone, this means from the County Council. But there is now no other way of restoring *power* to the smaller units : if this line of development is blocked it is unlikely that the representatives of the electors in small communities can regain any important share in administrative discretion.

IRENE W. SCARF

Manchester.

APPENDIX A

HASLINGDEN UNDER THE TWO-TIER SYSTEM OF GOVERNMENT

The responsible authority for *Major Services* is the County Council, and for *Minor Services* the Borough Council. The formal division of functions is now as follows :—

County Council.

Administration of Justice
Blind Persons Acts
County Bridges
Diseases of Animals Acts
Education
Fire Prevention
Food and Drugs (Special County Purpose)
Main Roads—Borough Council prepares scheme and carries out work under agency
Midwives Acts. (Special County Purpose)
Police
Public Health Services, including
- (*a*) Maternity and Child Welfare
- (*b*) Clinics
- (*c*) Ambulances

Road Improvements on Classified Roads—Borough Council prepares scheme and carries out work under agency
Town and Country Planning
Tuberculosis
Weights and Measures

Borough Council.

Allotments
Estates
Housing
- (*a*) Development
- (*b*) Slum Clearance, etc.

Industrial Development
Libraries
Markets
Mortuary
Other Roads—Maintenance and Repair
Parks, Recreation Grounds and Cemetery
Private Street Works
Public Baths
Public Buildings and Depots—Maintenance
Public Conveniences
Public Hall
Rating
Refuse Collection and Disposal
Road Improvements (excluding Classified Roads)
Road and Street Scavenging
Secondary Roads—Maintenance and Repair
Sewerage (excluding Sewage Disposal)
Shop Acts
Small Dwellings Acquisition Acts
Street Cleansing
Street Lighting
Transport.

APPENDIX B

ESTIMATES FOR THE GENERAL RATES 1946–49

	Estimate one year to 31/3/1946	Estimate one year to 31/3/1947	Estimate one year to 31/3/1948	Estimate one year to 31/3/1949
Precepting Authorities	£	£	£	£
Lancashire County Council				
County precept (including police)	41,381	45,257	49,704	45,478
Area Assessment Committee				
Proportion of Expenses ...	100	125	200	180
Outfall Sewerage Board				
Sewerage Precept	3,280	3,280	3,320	3,500
Irwell Valley Water Board				
Water Precept	600	450	600	1,200
Accrington and District Joint Hospital Board				
Hospital Precept	76	—	—	—
Total Requirements of Precepting Authorities ...	45,437	49,112	53,824	50,356
Haslingden Corporation				
General Fund Purposes ...	28,619	32,705	36,534	38,434
Rating Authority's Expenses ...	1,480	930	980	990
	75,536	82,747	91,338	89,780
Less :				
General Exchequer Grant under Local Government Act, 1929 ...	9,576	11,347	11,544	—
Local Government Act, 1948; Proportion of Exchequer Equalisation Grant	—	—	—	10,640
Grant towards loss of rates on Transport and Electricity Undertakings	—	—	—	1,220
	£65,960	£71,400	£79,794	£77,920
General Rate to be levied over whole Borough in £	16/2d.	17/6d.	19/6d.	19/6d.
Increase on previous year ...	—	1/4d.	2/–	—

APPENDIX C

Population (estimated mid-1946)	County District Representation for : Planning (Area No. 13)		Health (Area No. 12)		Education (Area No. 14)		Juvenile Employment Service
14,000	Haslingden	2	Haslingden	2	Haslingden	7	Haslingden
17,800	Bacup	2					Bacup
24,300	Rawtenstall	3	Rawtenstall	3			Rawtenstall
13,900	Ramsbottom	2	Ramsbottom	2	Ramsbottom	7	Ramsbottom
5,684	Tottington	1	Tottington	1	Tottington	3	
31,130			Prestwich	4			
26,840			Radcliffe	3			
12,380			Whitefield	1			
Area Population	75,724	10	131,234	16	33,632	17	
	*Local Planning Authority	5	Local Health Authority	9	Local Education Authority	4	
	Co-opted Members (Up to 2)		Divisional Education Executive Nos. 12 (part) 14 24 26	4	Teachers	2	
			Hospital Management Committee	2	Voluntary Schools	3	
			Co-opted Members	3	Co-opted Members	4	
	(Or 17)	15		34		30	

*County Council Representatives on Divisional Committees may be of three categories :—

(*a*) County Councillors who are actually members of the executive County Committee for that particular service, *e.g.* the County Education Committee.

(*b*) County Councillors who are not members of the County Committee.

(*c*) Non-County Councillors ; local people nominated by the County for their interest in the particular service.

The Habit of Voting

The question of why people vote is a vital one for a democracy. In Britain, where local self-government is firmly rooted, and where any attempts at major reform of the local government system are met with the argument that existing institutions must be preserved because they have the allegiance of the electorate, we still have little idea of the motives of that part of the electorate which uses its vote, and, conversely, of the reasons for the apathy of the other part. It is not likely that the answers to these questions are simple, or that they can ever be completely ascertained even in a relatively stable political community such as England. There are, however, two lines of research which seem promising : the first is by the application of statistical methods to the various sets of figures which are available on a national scale ; the second is by intensive study of individual behaviour in selected areas. Opportunities have recently arisen for a small scale trial of both methods, and the results are interesting enough to encourage further research. The article which follows is based on the Registrar-General's figures of voting percentages, first published for the elections of 1945-6.

First, it is worthwhile recounting the points that have already been established. Mr. E. C. Rhodes, who examined the exercise of the franchise in 28 London boroughs in 1938,[1] found (*a*) a positive relation between the tendency to vote and the percentage of children gaining Junior County Scholarships, (*b*) a negative relation between voting and the degree of over-crowding, and (*c*) no relation between voting and occupation. The same writer has also shown [2] that in the five years 1933-37 voting levels in 77 large English towns were remarkably consistent ; the variation between towns being great and the variation between elections in any one town being small. Analysing the figures, he found that (*a*) the propensity to vote of male electors was higher than that of

[1] "The Exercise of the Franchise in London," in *Political Quarterly*, Vol. 9, No. 1.

[2] "Voting at Municipal Elections," in *Political Quarterly*, Vol. 9, No. 2.

female electors, and (*b*) voting percentages were higher in the north of England than in the south. More recently, Political and Economic Planning have analysed the voting figures for 1945-6,[1] and concluded that (*a*) voting percentages are higher in the north than in the south, (*b*) voting tends to fall off as the size of the town increases, and (*c*) other things being equal, there is no significant difference between County Boroughs, Municipal Boroughs, and Urban Districts, though voting is less heavy in Rural Districts and very much less heavy in County Council elections.

None of these contributions, useful though they are, tells us very much about the central question of why more people vote in some areas than in others. Possible answers to this question fall into two general classes. The first class consists of what we may call "rationalistic" explanations. People may turn out to vote in large numbers when party organisation is strong, when the issues on which the election is fought are important to them, or when the contest between the candidates seems likely to be close. The other type of explanation regards voting as a social habit, conditioned by factors such as the structure of the neighbourhood, the strength of religious or other group, and the degree of social cohesion.

It is clear that the points recounted above are compatible with either type of explanation. More people may vote in the north than in the south, for instance, either because party contests are keener there, or because northern towns are richer in community spirit. But such evidence as is available points towards the second type of answer. In reply to the suggestion that party organisation is a crucial factor, it can be pointed out that organisation is undoubtedly stronger in the Greater London area than in most other parts of the country, and elections in and around the metropolis are attended by visits from prominent political speakers to a much greater extent than elsewhere. Yet the numbers voting in Greater London are consistently lower than anywhere else in England. In 1945-6 the propensity to vote in municipal borough and urban district elections was lower in London and Middlesex

[1] *Planning*. No. 291.

than in any other county, and the percentage voting in these two counties was 36·4, compared with 47·3 for all other urban areas of England, including county boroughs.

The suggestion that voting depends upon the electoral issues appears to have little more substance. The effective interest of the electorate in county council elections is considerably less than that in urban district and non-county borough elections, although the county councils now have more important powers. Moreover, the suggestion fails to account for consistency of voting trends in towns and areas. In the towns referred to below, there are only 13 cases, in a total of 162, in which the voting percentages of 1945-6 and 1946-7 differ by more than 12 points, and comparison with Mr. Rhodes' figures for 1933-7 shows that there is a general consistency over a longer period. It would be unreasonable to assume that electoral issues in Bradford and Carlisle are regularly more important than those in Rotherham and Norwich, so it must be concluded that this factor is of no more than minor significance.

The third of the "rationalistic" suggestions is that voting is affected by the closeness of the contest, or, more precisely, by popular anticipation of its closeness. In order to test this it is necessary to consider details of voting in one area over a number of elections. The following figures relate to voting in Manchester between 1929 and 1938.

TABLE I

	Average rateable value per head	Average polling participation
	£	%
5 city wards[1]	123	46·7
18 middle and upper working class wards[2]	22	39·3
12 working class wards[3] ...	14	46·3

[1] Rateable value of over £40 per head.
[2] ,, ,, ,, £17 to £40 per head.
[3] ,, ,, ,, under £17 per head.

During this period the city wards were predominantly Conservative and the poorest wards predominantly Labour, while the 18 middle-class wards fluctuated between the Conservative, Liberal and Labour parties. · It may, therefore, be safely inferred that during this period, in Manchester, the keenness of the contest was not an important factor in inducing the electorate to exercise its right of voting. This is, of course, insufficient to justify a general proposition, and it would be valuable to have more evidence on this point.

There are many social factors which may influence voting, but only two which can be examined in the light of national figures at present available. They are the wealth of an area as represented by its rateable value, and the stability of its population. They may not, of course, be the most important ; a survey of voting in New York City in the Presidential election of 1940 showed religious affiliation to be an important factor [1] and it is not difficult to think of others which may be significant.

In what follows the figures relate to all English urban areas—urban districts, municipal boroughs, and county boroughs—with a population of between 25,000 and 200,000. Within this range the influence of the size of the authority is not significant, as is shown by Table II, and there are hardly any uncontested elections. Two towns, in which there were several uncontested seats, have been omitted, as have fourteen towns in which figures are available for only one election, and three (Salford, Barnsley and West Hartlepool) in which the voting percentages of the two elections differ so greatly that an average would have little meaning. The voting percentages given are averages of the figures for the 1945-6 and the 1946-7 elections.

[1]See *The American Journal of Sociology*, Sept., 1945.

TABLE II

Population	No. of Towns in which voting percentage is :		Percentage of towns with voting of over 50%
	Less than 50	More than 50	
25 — 50,000 ...	49	31	39
50 — 75,000 ...	24	13	35
75 — 100,000 ...	11	7	39
100 — 200,000 ...	18	9	33
	102	60	37

The rateable value per head of each town has been ascertained and compared with its voting percentage.

The results are set out in the following table :—

TABLE III

Rateable value per head	No. of towns in which voting percentage is :		Percentage of towns with voting of over 50%
	Less than 50	More than 50	
£8 and over ...	36	9	20
£7 — 8	16	6	28
£6 — 7	20	20	50
Under £6	30	25	45
	102	60	37

This does not prove anything. It is clear that most towns of high rateable value per head have low voting percentages, but no general relationship can be established.

As a rough measure of stability of population, towns have been classified according to the percentage increase of their population between 1929 and 1948. It is certain that a town whose population has increased substantially in this period will contain a considerable number of voters not rooted, socially, in the area. It is less certain that a town whose population has not increased will contain few such voters, but in the absence of other evidence it may be regarded as likely. During the period the population of England increased by 7%. The following classification has, therefore, been adopted.

Towns whose population has decreased ... ... D
" " " " increased by less than 7% ... C
" " " " increased by 7-14% ... ... B
" " " " increased by more than 14% ... A

The North-West of the country is the region in which the general level of voting is highest. The following table shows that in this region, there is a clear relation between the stability of population and the habit of voting.

TABLE IV

	No. of towns in which voting is :					
Category	<40%	40–45%	45–50%	50–55%	55–60%	>60%
A		1	4	4		
B	1	1			1	1
C			1		4	1
D		1	1	11	3	5

In the South-East of England, where the level of voting is lowest, apart from Greater London, the relation is not so clear.

TABLE V

Category	<40%	40–45%	45–50%	50–55%	55–60%	> 60%
A	15	7	5	2		
B	1		1			
C	2	1	1			
D	4	2	1	2		

However, examination of the 11 towns in categories C and D with a voting percentage of less than 50, discloses that two of them (Aldershot and Chatham) are military towns of which it would be fallacious to conclude that their populations were stable because they had not increased, and four of them (Southampton, Gillingham, Canterbury, and Colchester) are towns of which the populations increased by more than the national average between 1929 and 1939, and have since declined as a result of the war. These six towns should clearly be omitted. It is interesting to note that, of the other five towns in this group, four are seaside resorts (Brighton, Hastings, Lowestoft and Gt. Yarmouth).

The next table shows figures for the whole of England (excluding the Greater London area), and omitting the six South-Eastern towns mentioned together with two other towns (Blythe and Dudley) of which the populations increased by more than the average during the '30's and declined sharply during the war.

The relation seems clear. Moreover, it is surely significant that of the 18 towns in categories C and D in which less than half of the electorate vote, no less than 11 are coastal or estuary towns. Six of them are seaside resorts (Brighton, Hastings, Cleethorpes, Southport, Gt. Yarmouth and Lowestoft), one is a fishing port (Grimsby), and four are

TABLE VI

Category	No. of towns in which voting percentage is :		Percentage of towns with voting of over 50%
	Less than 50	More than 50	
A	63	19	23
B	13	6	32
C	8	10	56
D	10	25	71
	94	60	39

estuary towns (Birkenhead, Bootle, Gateshead and Jarrow). In at least some of these towns, probably in all of the seaside resorts, the population may be a good deal more mobile than the stability of its size would suggest.

The conclusions of this enquiry may be briefly reiterated. There is no evidence that the tendency to vote is affected to any considerable extent by factors connected with the campaign, such as the strength of party organisation, the issues on which the election is fought, or the keenness of the contest. Rather, it is suggested that voting is a habit, determined largely by social factors. Examination of one of these factors shows that there is no general relation between the rateable value per head of a town and the degree of voting ; it can be said that most of the better-off towns have low voting figures, but the converse is not true. Examination of another factor discloses a clear positive relation between the stability of population of a town and the proportion of that population that exercises its right to vote.

A. H. Birch

Manchester.

Non-Voting in an Urban District

In an attempt to ascertain with some degree of accuracy the reasons which prompt citizens to abstain from voting in a local election, an intensive survey was made of a single ward in an urban district. The ward chosen is virtually a detached unit of the urban district, and is relatively self-contained. It was felt that the modern method of "sampling" would have been irrelevant in a trial run of this nature, as there is an absence of data for elections held in this country.

For comparative purposes it is perhaps useful to state that the selected ward covers 1,183 acres out of the district total of 4,753 acres, and its rateable value was £34,075 (1/4/1948) out of £103,446 (1/12/1947) for the authority. The estimated product of a penny rate for the county district was £410, and the population was 17,110. A recent annual report of the Medical Officer of Health declared that a great deal of the area, especially in the selected ward, is residential in character, and that the inhabitants are chiefly engaged in business in a neighbouring county borough.

The post-war electoral roll, which was set up largely on information secured through the rationing records of the local Food Office, was revised annually on the basis of similar information, and the ward's official roll issued in October, 1948, contained the names of 3,722 electors. In April, 1949, these electors were called upon to assist in the election of a county councillor for the urban district, and the survey was made in connection with this election.

The local Conservative party—the district council is predominantly Conservative in its composition—had decided to oppose every Labour candidate, and this decision was strengthened by the death of the previous county representative, a Labour alderman elected before the war and unopposed in 1945. Both candidates for the county election were district councillors, and the woman candidate had very strong local associations with the selected ward, having recently retired from teaching in the local council school.

It was hoped to secure the electoral numbers of the voters from the "number snatchers" outside the polling booth—there is only one polling station for the ward, and it is situated as centrally as is possible for the community in the local council school—but both candidates preferred not to pass on this information. The surveyors (of whom only two were employed) had thus to attempt to contact every elector in the ward. The method of approach was to ask those interviewed if they had voted or not, and, in the event of their not having voted, to invite them to co-operate by saying just why they had refrained. Only three people openly refused, though many naturally asked the purpose of the survey. Where electors were not at home, a simple circular and a stamped addressed envelope were posted, asking if the elector had voted, if he normally voted, if he was working on polling day, if he was out for the day or for a period, and inviting him to state his reasons for not voting. Table A indicates the information obtained through these circulars as an addition to the figures obtained by direct enquiry, and throughout the article this device is adopted.

TABLE A

	Married Men	Married Women	Unmarried Men	Unmarried Women
Voted	442+103	403+ 95	77+ 14	181+ 37
Not voted	120+ 17	169+ 28	37+ 4	96+ 17
Register wrong ...	41+ 5	43+ 5	41+ 8	46+ 7
Not contacted or Circulars not returned	451+145	443+140	134+ 44	256+ 73
	1,054+270	1,058+268	289+ 70	579+134

The survey was not as complete as had been hoped. To cover an electorate of 3,722 is by no means a physically easy task, especially when it is interrupted by the intrusion of the

Easter break and threatened by an impending urban district election. Whatever time of day or evening the investigators called, some electors were not at home, and not all those at home answer the door. The circulars failed to bridge the gap ; reference to Table A will show that, out of 742 issued, only 340 (45·8%) were returned. 73·3% of those who replied by circular claimed that they had voted, and an examination of Table D will show that the bulk of those who answered the circulars and admitted that they did not vote felt that they had good alibis. The survey revealed that most non-voters felt a degree of guilt about their abstention, and it is essential to regard many of their reasons as excuses. Perhaps it was this feeling which led to "a great deal of apprehension among the electors, owing to the fact that certain people were knocking at doors and inquiring whether they had voted or not, and if not, why not." [1] Apparently the methods practised in totalitarian countries have created an element of suspicion in this country, and the secrecy of the ballot is questioned. When the survey had covered more than half the electors and it was apparent that the local council had no desire to co-operate, the investigation was abandoned, and, instead of being a mathematically complete inquiry, it remains as a sample that has covered 55% of the married men, 56% of the married women, 50·4% of the unmarried men and 53·9% of the unmarried women.

TABLE B

DISTRIBUTION OF THE FOUR CATEGORIES

	Total	Contacted	%	Not Contacted	Circulars not Returned
Married Men ...	1,324	603+125	55·0	451+145	53·7%
Married Women ...	1,326	615+128	56·0	443+140	52·2%
Unmarried Men ...	359	155+ 26	50·4	134+ 44	62·9%
Unmarried Women	713	323+ 61	53·9	256+ 73	54·5%

[1]Local newspaper report of speech in Council meeting.

In connection with the distribution of married and unmarried electors it is necessary to add that the survey had only the electoral roll at its disposal, and, accordingly, it was assumed that a man and a woman bearing the same name in a household were married, and, despite modern housing conditions, only one married couple was reckoned to a household, unless the interview disclosed a different state of affairs. Thus, for the purposes of this survey a surviving partner of a marriage is classed as unmarried.

The survey suggests that it is the married men who take most interest in local government affairs.[1] Whichever of the calculations are examined in Table C, the married man appears to be the most frequent voter; at the worst, it would appear that rather more than three out of every five husbands voted on this particular occasion. In only 13 instances did the

TABLE C

% OF ELECTORS VOTING IN THE DIFFERENT CATEGORIES

	Married Men	Married Women	Unmarried Men	Unmarried Women	Total
(*a*) On the basis of personal contacts only	78·6	70·5	67·5	65·4	72·3
(*b*) Using the results from circulars only ...	85·8	77·2	77·8	68·5	79·0
(*c*) On the basis of contacts in person and by circular ...	79·9	71·7	64·1	65·9	73·5
(*d*) Assuming circulars not returned indicate non-voters	65·9	59·6	51·7	54·0	60·3
(*e*) Assuming circulars not returned indicate non-voters and omitting the dead from the electoral roll ...	62·4	56·4	42·9	48·2	55·9*
(*f*) Circulars not returned	53·7	52·2	62·9	54·5	54·2

* The official figure for the ward was 56·5%. Other official figures for the district council elections, selected ward only, are :—

1946 ... 68·8% 1947 ... 63·8% 1948 ... 65·3%

[1]H. Tingsten, *Political Behavior*, Chapter 1 supports this view.

husband fail to vote when his wife voted; the number of wives failing to vote when their husbands voted was 65, just five times as high. In 10 of these 13 instances of the husband not voting, his abstention appeared inevitable. Six were physically incapable of going to the polling station, having been involved in an accident at work, being housebound or confined to hospital, and two were "ill in bed." Another was merely "ill," and one was aged 72 and "really not fit to go." A young husband made a very strong yet logical attack on the suitability of both candidates for election as county councillors, while yet another had gone off for the weekend to the international match at Wembley. One married man, having worked in the morning, became involved in household tasks, and regretted he had not made time in which to go to the poll. In only two of the cases did it appear that the husband of a vote-conscious wife could be described as indifferent; one described it as "not convenient," and the other confessed he had simply been to a football match in the afternoon and had then taken his wife to the cinema in the evening.

An examination of the reasons for non-voting offered by married men reveals few answers that may be particularly associated with the state of being married. (Table D). Thus the four reasons most frequently given were indifference, absence on a day excursion, illness or absence from the district for a weekend or longer. On the other hand there is greater likelihood of a married man undertaking overtime or extra work on a Saturday, and 12 married men stated they were at work. Further enquiries of a man who worked on the Saturday showed that he finished at noon, went to an afternoon football match and so was "too tired to vote in the evening," while two other workmen confessed that they hated to be seen in their working clothes on a Saturday, and so they had hurried past the polling station. However, there were genuine cases. While the man who slept till half-past four before going on the night shift might well have voted, the workman who was suddenly called out to an emergency breakdown was definitely prevented. Again, married men are called upon to do repairs in the home, and it is difficult to interpret "domestic reasons";

TABLE D

REASONS GIVEN FOR NOT VOTING

	Men	Women	Married		Unmarried	
			Men	Women	Men	Women
Not interested	27	31+ 3	18	17+ 1	9	14+ 2
Forgot	4	8	4	8		
Out for the day ...	18	24+ 6	13	18+ 3	5	6+ 3
Distance from poll ...		1				1
Not canvassed		1				1
Not familiar with candidates		2		2		
Not woman's job ...		5		3		2
Result foregone conclusion	1+ 1	1+ 2	+ 1	1+ 2	1	
Disappointed with Labour	2	2	2	1		1
Bitter against Socialism	1	1			1	1
Cynical	4+ 2	6	3+ 1	5	1+ 1	1
Advised to be non-political... ...	1	1	1	1		
Not important	3+ 1	3+ 1	2+ 1	1+ 1	1	2
Forgot poll number ...	1	1	1	1		
Cancel each other's vote	2	2	2	2		
Out of the district (for a period of more than a day) ...	28+10	36+12	18+ 8	15+ 7	10+ 2	21+ 5
Candidates	11+ 3	14+ 6	10+ 3	11+ 5	1	3+ 1
Nursing	7	14+ 1	7	11+ 1		3
Ill	23+ 3	59+ 9	19+ 2	33+ 5	4+ 1	26+ 4
Age	3	12+ 2	1	3	2	9+ 2
Working	13	8	12	5	1	3
Domestic	5+ 1	9+ 1	4+ 1	9+ 1	1	
Decorating	3	6	3	4		2
Children		18+ 2		18+ 2		
	157+21	265+45	120+17	169+28	37+ 4	96+17

The first number conveys information secured by interview ; a number preceded by a + sign indicates information secured by circular.

obviously the three husbands who had set aside polling day for decorating their homes could not reasonably be expected to record their votes.

Of the 13 married men who objected to the candidates, only five openly confessed they were Liberals. One man deplored the system of party politics in local government matters, and another felt that either of the candidates would be "guided by a narrow partisan spirit." Another ominous observation on party influence was to the effect that "both have their good and bad points which practically wipe each other out. So I take practically no interest in politics." Two men expressed themselves as Labour supporters who were disappointed with the party, which they felt had "let down the working man," although they felt unable to support the Conservative candidate. Three men specifically mentioned that the county was unimportant as far as the county district was concerned ; the county precept is 11/- out of a rate of 16/6d. · Another man expressed the view that, as the county district had only one county councillor, it had no control over the county council, and, therefore, voting was somewhat futile, while yet another, remarking that his council house had not been painted externally for ten years, contended that "There is no control over local government ; it is all Whitehall." Yet another critical remark was "I always feel lukewarm about local elections, feeling that busybodies are usually nominated, to the exclusion of more able people."

Reference to Table C indicates that the married woman is not as politically minded as her husband, though she is more interested than the unmarried man and woman. This tendency is again supported by Tingsten,[1] although the difference in the interest shown between husbands and wives is hardly as pronounced as his study tends to show. However, it must be remembered that the selected ward is really a middle-class area, and it was difficult to avoid the conclusion that the middle-class woman is more politically-minded than the working-class wife ; a survey which could study the degree of correlation between the rateable value of houses and the tendency of their occupiers to vote would be interesting. During the course of this survey there were several references by middle-class wives to Sylvia Pankhurst—"We fought for it,"

[1]Tingsten, *Political Behavior*, p. 230.

"Certainly ; it's a duty," "We never miss," "We went early," "You can be sure we vote"—although such enthusiasm was conspicuously absent among working-class wives. In the absence of precise data it is idle to speculate on the causes, but the impression gained during the survey was that such a difference does exist. Another factor making for an increased poll among the women of the ward was the personality and record of the Conservative woman candidate. The partial effect of this personal element is shown in the official polling figures for the three wards of the county district :—

Ward A (in which the woman candidate lives)	56·5%
Ward B (a somewhat detached and more rural ward) ...	51·6%
Ward C (where the industrial element is more pronounced)	42·8%

The influence of the husband on voting is perhaps illustrated by the following remarks. A working-class woman declared it was "quite enough if the husband votes," and a middle-aged woman "felt voting and politics were a man's job and not for women." One wife declared she did not vote because her husband did not vote, and another admitted she would most probably have voted if her husband had been at home. Of the 10 widows whom the survey revealed, only two voted, and one widow remarked that, as there was now no man in the house, she never discussed politics, although she voted most regularly when her husband was alive. The only widower discovered in the survey did vote. The inquiry did not disclose what influence on party allegiance is exercised by the husband, but at least two wives showed complete independence, for two couples gave as their reason for not voting the certainty that husband and wife would be cancelling each other's effort.

This tendency for a husband to develop his wife's political education is obviously not always in evidence. The survey disclosed 14 wives who had not voted and who did not even know whether their husbands had been to the poll or not. Whereas only 13 husbands whose wives voted failed themselves

to vote, there were 65 wives who did not vote even though their husbands did.[1] Unlike the non-voting husbands, quite

TABLE E

ANALYSIS OF THE VOTING AND NON-VOTING OF THE MARRIED PEOPLE

	Voting		Non-Voting	
	Men	Women	Men	Women
In couples	478	478	118	118
Single partner ...	65	13	13	65
Partner's attitude unknown	2	7	6	14
	545	498	137	197

a number of the non-voting wives could assert that their absence from the polling booth was largely due to their married status. In addition to two maternity cases, there were eight wives who had to look after families that ranged from a first baby to five children ; it is perhaps interesting that no husband gave the family as his reason for not voting, and it is difficult to resist the plea that more wives might vote if the husband would take charge of the family for a brief interval. The investigators felt there was some justification for the seven wives who pleaded domestic reasons, though this could be a mere excuse ; superintending the needs of four adults is probably a heavy charge, and surely the woman was invulnerable who wrote, "housewife, three children, seven hens, two dogs, one cat ; no time this year. This is quite true." Indeed, probably 44 of these 65 wives could not possibly have voted ; (17 ill, including at least three hospital cases, and one bedfast, eight children, seven domestic, six out of the district, two old age, two maternity cases, one nursing and one working).

[1]Tingsten, *Political Behavior*, p. 35.

It is not easy to accept the reasons for non-voting of the remaining 21, especially as their husbands voted. Five were blandly not interested, three forgot, two relied on the political sagacity of their husbands, and two pleaded they were new to the district and did not know the candidates. Tingsten contends that women are more reluctant to adopt the extreme political parties, and perhaps the three wives who declared themselves staunch Liberals [1] are illustrations of this tendency, as are the two wives who declared, "I did not like the Conservative, and the Labour canvassers did not visit me," and "I was not impressed by the policy of either candidate as revealed by their literature ; neither candidate made personal contact with me." Of the four remaining non-voting wives of husbands who voted, one was out for the day, one voted only on national issues as "local elections are unimportant," and the other two were dissatisfied. Of these two latter, one objected to the way in which the urban district was run, especially to the dirty state of the land in front of her home, while the other felt that the local council had failed in its housing plans, reasoning that it was a stupid state of affairs when her son could not secure a council house until he had a family.

Where a husband and his wife did not vote, the reasons tended to be very similar for the two of them. In the event of family sickness, the woman attends to the nursing. Though the wives appeared to be more prone to illness, some of their ailments were possibly of a minor nature and may hide some degree of apathy and indifference.

Possibly two other remarks by married women are worthy of note. A tenant of a rent-controlled house preferred to pay an additional 8/- weekly if she could have a council house, but she felt her request would be merely "a matter of form-filling." The other woman raised a point of interest. Virtually detached from the urban district is an old hamlet, and the connecting

[1] It is worth commenting that of the 16 married women who did not vote because of the candidates up for election, eight confessed they were Liberals ; the figures are small, and therefore not significant, but men who abstained because of the candidates were not as open in proclaiming they belonged to the middle party.

road is being gradually built up with a form of ribbon development, with better class property. The elector suggested that the urban district council completely forgot about the existence of the old hamlet; its inhabitants were not the people who mattered, for they "hadn't big houses." She even went so far as to suggest that the road surface had been repaired only so far as the rich property went, the rest of it being left "for the poorer inhabitants to fall in." The survey could only establish that 32 out of 109 electors, including those in the better property, had voted. Such a relatively small and detached community is obviously under a handicap, and must somewhat inevitably feel that its interests are sacrificed to those of its bigger and richer neighbour.

While the survey does support the view that married people are more likely to vote than unmarried people, it does not clearly establish the degree of interest or apathy displayed as between unmarried men and women. The number of men of this category contacted was not particularly large, and the results between the two sexes are not clearly distinguished. (Table C). If it is a reasonable assumption that unreturned circulars reveal non-voters—out of 742 circulars, 340 were returned and only 66 admitted non-voting—then the unmarried woman comes out rather better than the unmarried man, a result which is rather against the view commonly held, though possibly to be explained by the presence of a woman candidate with strong local associations in a middle-class ward.

The one factor which emerges from a study of the reasons offered for non-voting by the unmarried men, small though the sample is, is disturbing. In the sense that Saturday is, in a large measure, a general holiday, there tends to be an exodus from this particular urban district. As the polling station was very centrally situated, it is reasonable to argue that the bulk of those electors who were out for the day but who did not vote were apathetic towards the election of a county councillor. The elector who left one hour after the opening of the poll and owned he ought to have allowed a few minutes for voting was probably nearer the truth than the elector who left a further two hours later and said he had not (the) time for voting.

If, accordingly, those who forgot polling day, who went out for the day, or who declared the election unimportant are added to those who admitted they were not interested, the established degree of apathy works out at :—

Married Men	Married Women	Unmarried Men	Unmarried Women
27·7%	24·9%	36·6% [1]	23·9%

The greater degree of indifference shown by the unmarried men is a confirmation of the suspicion that, on this occasion at least, the unmarried women showed the greater degree of interest in the poll. If Tingsten's view is correct that elderly men tend to retain their interest in political matters, it would appear to throw a greater onus on the young single man. The survey found an example in a man aged 22 ; both his parents had voted, but it was the first time he had had the vote, and he "didn't understand it." Two more, both of whose parents voted, were busy playing football, and two brothers whose parents voted confessed they were "indifferent about local politics."

Only three unmarried men were critical, two elderly and one young. The latter did not vote because the local council "was not doing its job." He apparently wished to build a house, and was experiencing difficulty in securing the necessary licence. At the other end of the scale was a man with confused ideas on socialism and the welfare state; he did not vote because he had carefully saved up for his old age and "the present system is taking if off me." The other elderly man had a grievance of a similar nature. "I had reported to the candidate personally about the conditions that I was living under, and she promised she would come and look for herself, and she never came near. I am sorry that I wasn't at home, as I might have given you some information of my working life from ten years of age to seventy-five." Such criticisms are of a national rather than a local nature, and are possibly an inevitable result of the intrusion of party politics into local government.

[1]It is, however, important to remember the limited number of individuals contacted in this class.

It was among the middle-aged unmarried women that considerable enthusiasm was found. It was they who suggested that it was a "privilege to vote" and that non-voters should be fined, or disfranchised, or even compelled to vote; presumably, the suffragettes, to whom they often triumphantly referred, were live characters whose activities they had probably heard discussed in their homes. It is perhaps worth observing that, on the council estate, in a close of bungalows reserved for elderly people, the greatest enthusiasm was displayed, prompting the reflection that, while marriage may be an important factor in the tendency to vote, the age factor is also of tremendous importance. 20 out of the 21 electors were contacted; three were too ill to go to the poll, 16 voted and one did not.

On the other hand the two ladies—one of whom took "no interest whatever in municipal voting" and had not voted for years, while the other never voted, for it was "a masculine prerogative to vote"—were both elderly. Both these two ladies were living completely on their own. The critical note was sounded by a widow who had reported a leakage in her council house, but it had not been attended to for months; "councillors make promises but do not carry them out." Among the youngest women the survey revealed only two instances of enthusiasm; a girl about to attain her majority pursued the investigator down the street to inquire how she could get on the electoral roll, and a newly-married wife aged 21 wanted to know how to secure the vote "now that I am the wife of a ratepayer."

Table A reveals that the voters contacted were distributed as follows :—

		% of Poll			%
Married Men ...	442+103	40·3	Total Men ...	519+117	47·0
Married Women ...	403+ 95	36·8	Total Women ...	584+132	53·0
Single Men... ...	77+ 14	6·7			
Single Women ...	181+ 37	16·1			
	1,103+249				

In other words, owing to the indifference of the unmarried men and to the greater number of unmarried women—Table F shows they formed 19·2% of the electoral roll, as against the unmarried man's 9·6%—it was the women who were the preponderant factor in the electoral result. Tingsten's work shows that women tend to have a conservative influence in politics.

TABLE F
DISTRIBUTION OF THE SEXES

Married Men	1,324	35·6%	Married Women ...	1,326	35·6%
Unmarried Men ...	359	9·6%	Unmarried Women ...	713	19·2%
Total Men	1,683	45·2%	Total Women ...	2,039	54·8%

A survey of this type cannot fail to leave some impressions on the investigator, impressions which cannot be expressed statistically. Housing is obviously the most controversial of local government services. Those electors who had a local grievance were mainly concerned with their inability to secure a home, or with the reluctance of the authority to maintain its property in the state desired by the tenant ; no other service

was mentioned, not even education. Another impression gained was the tendency for people to cast their votes according to national and party issues rather than in accordance with purely local questions, and party politics are clearly established in local government matters, despite the regrets of individual electors. It was, moreover, difficult to resist the impression in this particular election that the Conservatives were full of enthusiasm ; electors frequently volunteered the information, not only that they had voted, but that they had "got the right man in," or that they must "get this lot out," whereas Labour supporters rarely disclosed their party and perhaps sheltered behind such a phrase as "the Conservatives are bound to win in this ward," or "it was a foregone conclusion."

While it is common in local government circles to regret the indifference of the electorate, it is evident that there are still many enthusiastic citizens who feel that "voting is a heritage," or "it is no use having a conviction if you don't express it." There were frequent expressions that "we always vote" or "all the members of this household never fail to use their votes." Indeed, the official poll of 56·5% does not reveal an apathy of 43·5%. Apart from 18 deaths, the survey disclosed that the electoral roll was wrong [1] for 178 electors out of 2,018, including two evacuees and a boy aged 12, an error of 8·8%, while it would be possible to reason that 123 out of 178 men and 210 out of 310 women had good excuses for not voting. In the table below the worst interpretation has been set on those electors who preferred not to answer the circular ; not only has it been assumed that they were non-voters, but that their abstention was not reasonable. (Of the 66 non-voters who did return the circular, 50 could put forward some good reason.)

[1] *Vide* Tingsten, *Political Behavior*, p. 94.

		Total	%
Electors voting	1103+249	1,352	55·5
Registered wrong (including 18 deaths) ...	171+25	196	8·0
Non-voters ; involuntary (⅔ approx.) ...	325	325	13·3
,, voluntary (⅓ approx.) ...	163	163	6·7
Circulars not returned ; "non-voters" ...	402	402	16·5
		2,438	

It would appear that, at the worst, there exists real indifference among 23·2% of the electorate.

Apathy in 20% of the electorate is, however, a serious problem, and perhaps it can be explained by lack of knowledge. The survey brought out some trivial remarks that lend support to this view. Some electors justified their absence from the poll by contending that the county was not important to an urban district, and there were instances of people who would vote for the district councillor but not for the county councillor. (See Table C for the percentage polling in the recent district elections.) There were people who did not know the times of opening and closing the polling station, and others who thought it was impossible for an elector to vote unless he was a ratepayer or knew his electoral number. There was the policeman who interpreted his superior's advice to be non-political as meaning he must not vote. There were people who did not know how to get on the electoral roll. Even though the county district is being denuded of its powers, electors need to know what powers remain, and they must certainly realise the importance of the part played by the county.

Public Relations appointments are invariably criticised on the grounds of expense, but, if every local authority set up a public relations committee, much of this lack of knowledge

could be corrected, and simultaneously many of the authority's critics could be disarmed. Moreover, as party politics appear to have intruded themselves into local government matters—many remarks were of a national rather than a local level—there is possibly a case for the national party leaders broadcasting in the days immediately preceding local elections. Somehow the apathy of the elector who will not put himself out a little to vote before going out for the day has to be disturbed.[1]

Despite the counsel of the French, it would appear that, owing to the large number of people who were out for the day or away for the week-end, Saturday is a bad polling day, at least for urban areas. At least two electors made the suggestion that Saturday, and especially a fine Saturday, did not help to bring people to the polling station. Finally, quite a number of the aged people would have gone to the poll if they had been provided with transport; they complained of the young electors who went joy-riding in the party cars. Is there not a case for the public authority, and only the public authority, providing such transport?

[1]One elector ventured the suggestion that the ballot box should be brought to the house, while another would vote if it was "made convenient for him!"

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Books Received

DUDLEY DILLARD :
The Economics of J. M. Keynes :
The Theory of a Monetary Policy :
Crosby Lockwood & Son, Limited.

Dr. B. NATARAJAN, M.A., D.Litt. :
A 500-Crore Plan for Madras Province :
Reprinted from "Policy Forum," Published by the Department of Social and Economic Studies, Tamil Nad Congress Committee.

Dr. B. NATARAJAN, M.A., D.Litt. :
A Scheme of Crop Insurance for the Province of Madras :
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Marktwirtschaft und Sowjetwirtschaft :
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LUDWIG VON MISES :
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A Treatise on Economics :
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The Role of Science in the British Economy

I. Introduction.

It has been frequently stated in the past few years that while British science is excellent there exists in this country a general incapacity for applying it. One is able to find this point made in countless editorials, in white papers, [1,2] and repeatedly in addresses and articles of research directors and managers.[3,4,5] Economists point accusing fingers [6,7] and the talk of any civil servant dealing with scientific affairs is full of this collective self-flagellation.

So often does one hear variations upon the theme that an outsider wonders whether it is really true. Is it a myth, accepted because it is so often repeated, or does the personal experience of the individual scientist accord with the general belief? Has Britain been let down by her scientists and engineers or, as some will have it, by her industrial directors who wouldn't think of considering a new idea? Most pure scientists will agree with one or both ways of putting the question—and proceed to push their own research into still "purer" areas of inquiry than before. Most applied scientists seem to concur and yet wistfully wish that they personally had the opportunity to do "fundamental" work at not too great a sacrifice in income.

It does not take much of an investigation to come to the realization that the charges are substantially correct. Systems and institutions for the application of new science

[1] *Higher Technological Education* (Percy Report) H.M.Sta.Off., 1945.
[2] *First Annual Report*, Adv. Council on Scientific Policy (Tizard Report) H.M.Sta.Off., 1948.
[3] A. P. M. Fleming, "Bridging the Gap between Science and Industry," B.A.A.S. Address, Sept., 1949.
[4] Lord Simon of Wythenshawe, "The Mission of the University from a Consumer's Point of View," *Univ. Quart. 4*, No. 1 (1949).
[5] *Report.* Conf. of Industrial Research Directors and Managers, Fed. of Brit. Ind., London, 1949.
[6] W. A. Lewis, "The Prospect before Us," *The Manchester School*, May, 1948, p. 150.
[7] R. S. Edwards (study of British research associations), in press, 1950.

in Britain *are* defective, but most diagnosticians have stopped at this finding. They have provided many explanations for the inadequacy but have failed to establish whether it was a symptom or a disease. Doctors learn early in their training that treating a symptom is at best a palliative; if a cure results it is a matter of luck rather than good sense. It, therefore, seems worthwhile to probe somewhat deeper into the relations that exist between British science and the British economy. Then it can be ascertained whether the measures which have already been taken to reorganize research and development institutions are adequate. If not, perhaps additional action can be suggested which would fit the need.[1]

An American has some advantages over any local investigator when approaching this problem. He has lived in an economy where applied science pays off handsomely and consistently. He has, in addition, a perspective which an indigenous scientist or economist would find impossible to achieve. He is not involved in any of the current controversies and polemics and therefore finds it easier to be fair and objective. He does not have to tread cautiously when dealing with sensitive subjects because his standing will depend very little upon reactions within this country.

There is, however, one trap into which many American scholars and analysts fall. They try to remake the British economy in the North American image. One has to proceed very warily if this mistake is to be avoided. It is mentioned in the introduction of this paper primarily to warn the reader of the type of bias that may creep into the discussion to follow.

[1]The author has tried to bring to bear upon this study as much appropriate experience as possible. He has had a chance to participate in both fundamental and applied research in the United States, proceeding as far up the ladder as pilot plant studies, market research and technical service. In Britain he spent a period working in the laboratory as an applied scientist, and is following several projects through the various phases preceding actual production in order to gain a first hand understanding of the difficulties faced. Contacts were made with academic research in various disciplines and in a half-dozen scattered institutions in the United Kingdom. The judgments in this paper rest upon intimate contacts with current developments in physics, chemistry, ferrous metallurgy, biology, and electrical engineering, as well as a survey of relevant published work on both sides of the Atlantic.

II. The Economic Value of Research.

Some useful ideas come free. They may be happy accidents which, once hit upon, can be reproduced at will and can be spread by imitation. But in a modern industrial society the accidental discovery of new and useful ideas is not enough. Economic and social changes are so great we have found purposive and organized invention, development, and testing of ideas to be necessary. Nowadays we must pay for ideas, not only with grants and royalties to individual inventors, but for the maintenance of scientists, engineers, and laboratories. When the sums involved reach into hundreds of millions of pounds, as they do at present, then some investigation of the value received is warranted.

The present functions of research are manifold. Some researchers act as intelligence operatives for society; they explore the possibilities and limitations of the environment to which the society must adapt. Others are, more strictly, problem solvers; they have become skilled in using the advanced theories and analytical techniques to eliminate difficulties arising from social change and the grasping of economic opportunities. A few are bending their efforts toward creating a new aesthetic of rationalism where the participant deals with mathematical symbols and abstractions rather than the forms and images of the artist—a cosmogony or general theory is created or criticized rather than a picture or a poem or a concerto.

Scientists, engineers, and medical practitioners are hired to carry out such tasks as perfecting military weapons, improving public health, the raising of production efficiency, the testing of quality, the prevention of waste, or merely extending the boundaries of knowledge. For all such categories of research it is impossible to supply economic standards of value. Perhaps only a third can be measured in this manner, although the others (especially weapon development and public health prospects) are very likely to have important economic repercussions. These distinctions should always be kept in mind because a country may apply its creative energies very successfully, according to current social or

aesthetic standards, but fail spectacularly on the economic side. It can be successful on each score or it can miss altogether. Much can be said about British research in all these aspects but the following discussion will be limited purely to the determination of economic value.

The task of assessing the return from the funds laid out for research is obviously not a simple one since research is only one element of a half-dozen or more which are essential to a dynamic expanding economy. For instance, an advanced, highly differentiated educational system is a prerequisite for successful scientific research and the research is prerequisite to the profitable application of capital—and the need for political stability and a recognized system of justice underlies this whole process. We must find some method of viewing research so that it becomes a marginal quantity, something that can be subjected to a subtraction-or-addition or before-and-after calculation.

In addition, the time lags which are involved and the indirect uses to which the new knowledge is put tend to confuse any economic anlysis. The useful ideas that are a product of research may be set to work a few years, or a few decades, after they were generated, or they may merely serve as a sort of insurance by providing reserves which are never called upon but nevertheless affect policy-making. Ideas are frequently made obsolete by newer and more powerful ideas, while in other cases they become an integral part of a technology or an enterprise. Accordingly some research must be treated as an operating expense, some as a portion of the capital investment which is amortized over a period of years, and part as an inexhaustible resource. A given research project may fit into one or more of these accounting conventions, but under no circumstances is the fitting very satisfactory.

It is simpler to begin an analysis where the research is expected to yield an economic return, where the goals of the projects are explicit, and the time lags between the outlay of funds and the prospect of income ranges from 1-10 years. Almost every large firm has attempted at some time in the recent past to establish the real and potential money value of

its research. A need existed for some concrete information because decisions have to be made as to whether future investment should be concentrated in research, production, sales, or some other phase of operations. Cost accountants can arrive at some sort of a figure, after setting up a series of conventions and assumptions. Granting that the uncertainty in evaluating the returns from research may be more than $\pm 50\%$ it still turns out that co-ordinated research and development contributes a sizeable entry to the profit side of the ledger. It has been good business to expand and re-equip industrial research both in Britain and in the United States.

No calculations of the value of research to a given firm seem to have been published in Great Britain. The most frequently quoted example in the United States is that for the Standard Oil Development Co., a subsidiary of Standard Oil Co. (N.J.), and an employer of more than 2,000 professionally trained scientists and engineers. The figures in Table I are quoted from a speech by R. P. Russell, a former president of the subsidiary, made in 1947.

TABLE I

PROFITS FROM RESEARCH AND DEVELOPMENT
(per annual dollar invested)

Savings in royalties	$3·70
Profits from product and process improvements	9·60
Profits from new products	2·10
TOTAL	$15·40

It constitutes a running average over a decade of operations. No description of the method of calculation was made except that the profit quoted was profit to stockholders. This total is probably higher than the average for all research organizations in industry, but it is not far out of line with the experience of other concerns which made heavy outlays for research.

Recently proposals have been made for differentiating between various programmes and projects within a company as to their respective marginal profitabilities.[1] It is suggested

[1] "Does your Research Pay Off?" *Business Week*, 3rd Dec., 1949, 26.

that an empirical index can be set up where the accounting techniques are standardized and simplified, so that the calculations are comparable when going from firm to firm in the United States.

III. Research in a National Economy.

A firm is able to realize only a portion of the returns from research. To a very large extent the customers and suppliers of the firm participate in the gains and its workers tend to achieve higher and steadier incomes than are found in other firms which profit less from research. The economy as a whole benefits from the secondary and tertiary effects of the application of science. Indeed there are many areas of research activity which yield so much in the way of secondary and tertiary increments to income that the work is profitably sponsored by the State. The question of State policy toward research and development however brings up a new query : What valuation can be put upon research in an advanced industrial economy ?

The assumptions and conventions which need to be applied for the analysis of an industrial economy are less arbitrary than in the case of the firm. One can, in fact, depend upon classical economic analysis, such as the recent survey by Fourastié.[1] *If one assumes that gains in productivity are obtained by exploiting economic opportunity with capital investment*—certainly this is a reasonable assumption—then there remains only the task of determining what portion of the opportunity is due to scientific advance.

There are several aspects here of which economists are incompletely aware. For instance practically 100% of current capital investment in new production facilities is based upon modern science—the kind for which there was a research and development outlay within the last few decades—rather than the traditional arts and crafts where the outlay for innovations and improvements is seldom, if ever, visible. The same is

[1]Fourastié, J., *Le Grand Espoir du XXe Siecle*, Presses Universitaire de France, 1949, pp. 4-38.

true for communications and transport, while for food and shelter one finds important exceptions. Some sections of the latter two categories use up-to-date engineering and science but a large part remains in the handicraft stage and is dominated by that mentality. Without science the opportunities for the productive use of capital would be very small ; most of the savings would flow into fortifications, palaces, churches, and monuments, as it has in the past. Thus for an economy where there is no population growth and no increase in the rate of resource depletion one is inclined to ascribe virtually the whole increase in production to the large scale application of science. It is true that capital is used in large quantities to take advantage of opportunities offered by scientific research but in the absence of research the alternative interest rate would be approximately zero, possibly slightly negative. With insufficient research the marginal utility of capital would be very small but still positive, unless the research was unbalanced by being restricted to a very few fields of application.

We shall assume then, as a reasonable approximation, that the utilization of opportunities presented by organized research and development makes *all* the difference between a stagnant economy showing no perceptible overall progress and an advanced industrial economy which shows consistently increasing productivity. The value of the research activity can then be measured in terms of increment in income that normally occurs. Corrections should be made for population increase and changes in the use of exhaustible resources. If the increment so obtained is less than the total expenditure upon research and development then it can be said that research and development is unprofitable *in the economic sense.* (It should be remembered that only a fraction of the research is carried out with economic ends in mind ; many common objectives are such intangibles as security, happiness, health, freedom, etc.) If the increment of total income is greater than the outlay for research and development then it can be said that the outlay for research and development is profitable to the extent of the difference between the two. Such a

calculation can be made quite easily for the United States because the National Research Council makes an annual estimate of overall expenditure upon research and development and all the relevant economic data are available.

TABLE II

EVALUATION OF RESEARCH IN THE UNITED STATES

Approximate national income for the U.S.	$200,000 m
Estimated outlay* for research and development (1949) ...	1,930 m
Average annual increase in productivity†	3%
Annual increment due to increase in productivity	6,000 m
Rate of internal new investment, per annum (1949)	17,000 m

* The breakdown of this total is not yet available but it is believed that about a third of this is for military research, a sixth for medical investigations, and another sixth for academic and research institute type investigations whose economic repercussions are indirect. The remainder would go for industrial and agricultural research where increased economic efficiency is a primary objective.

† In the last three decades, *i.e.* since organized research and development become an important feature in the American economy, the increase in the national income under conditions of full employment has been greater than 4% per annum. The pattern of resource utilization is complicated and warped by stockpiling and other military demands but, in general, it may be surmised that the use of fuels, the scarcer metals, and the depletion of forests and soils remains constant or even diminishes at the present time, thus no allowance need be made on this score. Allowing for an annual 1% increase in population gives the estimate of a 3% increase in productivity.

One can say then that for every dollar put currently into research three dollars are obtained as a result of making use of past research. The figure for new investment was included because it gives some idea of how much capital is required to utilize the results of research in order to obtain the annual increase indicated. For every dollar expended upon research in the U.S. economy about ten dollars of net savings are required.[1]

This method of taking a cross-section of an economy whose thickness is just one year and examining the quantitative relationships between different portions of that cross-section

[1]Probably a similar calculation could be made for the British economy but it would constitute a major effort. Many of the results of research elsewhere are purchased for application here. In addition a large share of the capital flows abroad for purposes that are difficult to classify. The use of metals and fuels is increasing rapidly yet. On all sides one finds that statistics are less available.

is somewhat unusual. Some critics will point out that it is fairer to attribute the $6,000 millions return to the much smaller level of research which existed 5-15 years previously. But the approach used here is defensible. The expenditure for research is a contemporary cost made necessary by past research which created the belief that the future can be made to conform a little more closely to the present ideals of the American culture. That much research, $1,930 millions in all the various lines of endeavour, is deemed to be necessary to maintain the "steady state" of continuous growth and expansion which is still expected by the citizens and to which most of the rest of the economy seems to be geared.

A particular vexing problem remaining however is that of determining how much research should be done. How much research is too much? There is no textbook or published guide which even gives a clue to the answers for such questions. They lie in the indeterminate and forbidden area separating science and economics. Economists cannot fathom the special jargons employed by the scientists and engineers, while the latter, when faced with such problems as these are inclined to settle the matter by using "common sense." This means that they employ the appropriate myths and empiricisms common to their circles without going to the trouble of investigating and assessing the problems in a reasoned inquiry.

It may help to recount the history of a firm which obviously employed too much research and development. One American chemical company in the '30's noted that the money expended upon research appeared to return handsome profits and thereupon resolved to double the expenditure upon research. By this means it hoped to move ahead of its competitors. The normal expenditure in the industry at that time was 1·5-2·5% of sales, so this company increased its outlay to 5% or more. The management of the research was relatively good so the policy actually yielded, after a few years, about twice as many projects for commercial development as before. But then this concern found itself in a peculiar position. Twice as much new plant required twice as much venture capital, but, because of the larger outlays for research in preceding years the rate

of accumulation of surplus and undistributed profits was less than its competitors. Therefore it was forced to go to the banks and security markets for 80-90% of its capital requirements instead of the normal (which in this case refers to a rule-of-thumb measure of safety used by bankers and insurance company investors) 60% for the industry. This situation made the lending agencies highly suspicious of the firm's proposals. In order to assure that the firm provided satisfactory equity in the new processes the bankers and their management consultants required the firm to drop some of its likely looking projects. (It tried to peddle them but found no takers that the industry is aware of.) Thus the company was left with a research and development organization far larger than was warranted by its ability to capitalize upon the opportunities provided. A new equilibrium was sought by making a 40% reduction of research and development staff—a move which totally demolished morale and wrecked the channels of action within the organization.

The incident gives some insight into the factors that must be taken into account when trying to determine how much research is too much, and a rough indication of how to judge what is desirable. The firm mentioned above chose to expand at a time when suitably trained people of real ability were readily available, a situation which is not true to-day. It also contained a well-balanced managerial nucleus capable of handling the trials of very rapid growth in the laboratory and engineering design divisions, a condition which frequently does not exist. This company's policy came to grief because the executives did not realize that new capital has certain kinds of strings attached to it which the investors or their agents can demand. The demands are usually met when risk capital is scarce. Still another feature is the requirement that the economy being served is in a state of flux, *i.e.* industrial and consumer demands are changing, and that new forms of goods will be readily accepted when they appear.

When a whole economy is considered in the light of this example the features which are at present quantity-determining, as far as research and development are concerned, must be

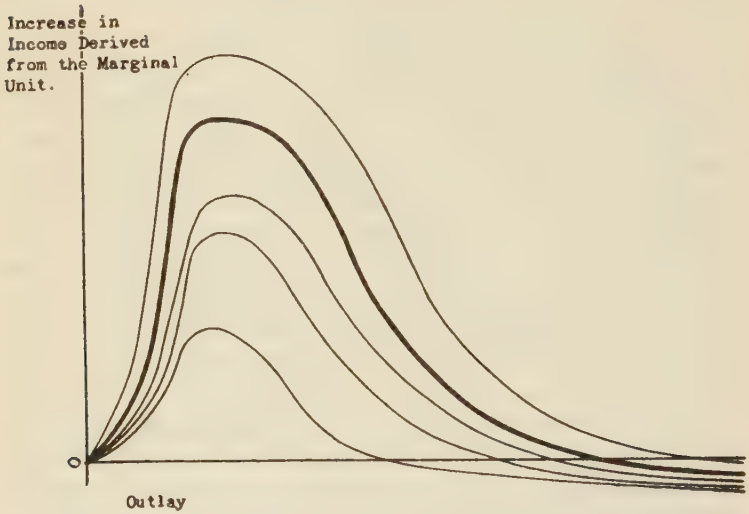
sought out. What are the most important hindrances to increasing the economic value obtained from research? The lack of suitably trained men of high intellectual calibre was mentioned. This is rapidly being removed in most advanced economies. The circumstances affecting the efficiency of research organization are a matter for extensive study but, on the whole, the present defects are no more severe in an expanded organization than they are at present.[1] For purposes of economic analysis the effects of changes in quantity of research upon the efficiency of its management should be neglected. The next factor, the requirements of capital, cannot be ignored. For a firm it is often possible to concentrate research upon capital-saving rather than labour-saving developments and thus to a certain extent evade the restrictions laid down by the scarcity of capital available to it but an economy usually finds that such work must be balanced by capital-requiring effort in some other area. It is reasonable to expect that if research effort over a whole economy is expanded by 20% then the requirements for capital to exploit the new opportunities to the same degree as before will soon be increased by 20%. The last factor, the presence of a receptivity to changes in patterns of trade, exists in all advanced economies at the present time. The stimulus of the hard currency shortage, as well as many social changes arising from the war, encourages substitution, totally new commodities, and the abandonment of tenaciously held traditions.

We arrive at the conclusion then that, for research now under way, the availability of risk capital will very likely be progress-determining. Some opportunities for the use of capital are more fruitful than others. If the availability of capital is held constant, one is able to draw, in a qualitative fashion a curve representing the marginal utility of research and development. Actually, of course, a family of curves would be obtained (see Fig. 1). This representation is helpful because it enables one to follow qualitatively the effect of other

[1]See the discussion in a subsequent article "Research as a Social Process." In it some of the distinctive features of the present organization of British research are critically outlined.

FIG. 1.

THE MARGINAL VALUE OF APPLIED RESEARCH AND DEVELOPMENT.



A very small amount of applied research and development is likely to yield positive results but the general inertia in an otherwise stagnant economy severely handicaps the effort. As applied research effort increases, opportunities for profit multiply, and each new increment can be highly productive. After all the more promising areas for applied research are explored the value of the increment decreases quite rapidly until at some point it is not able to balance the cost. One obtains, therefore a family of curves describing the relationship where the maximum marginal income may be 10-50 times the outlay. One can move up in the family of curves by increasing the amount of fundamental research available and by increasing the size of the economy.

factors, such as size of the economy, increased or decreased fundamental research activity, etc., upon the profitability of research and development as a whole. The curves are drawn so as to be particularly appropriate to economies like the British which are mono-cultural, politically stable, have continued access to essential resources, and are not greatly affected by population growth.

IV. Fundamental Research in Great Britain.

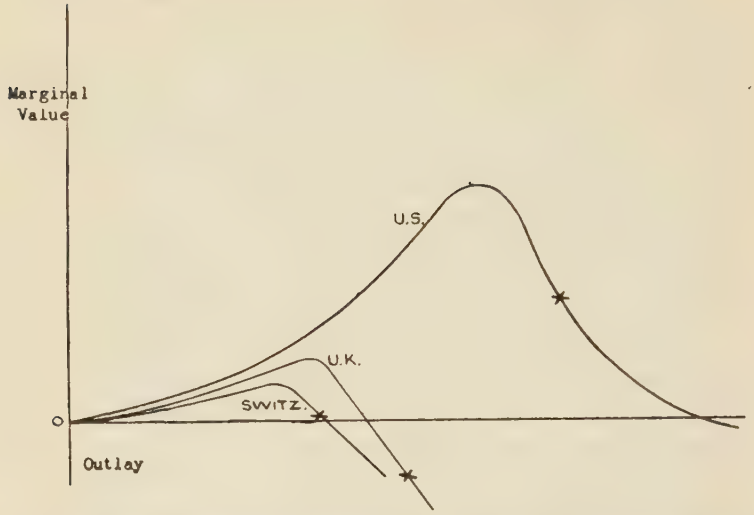
Fundamental research serves to open up new opportunities for applied research and development. This does not mean that it is always pure research, uncontaminated by any prior indication that the work would be useful. On the contrary an increasing amount of the fundamental work done in the world as a whole is undertaken with the specific purpose of illuminating the foundations of science that are of interest to industry, agriculture, nutrition, medicine, etc. It is a means of solving truly difficult and intractable problems. The best working definition of fundamental research is that it is the kind of work which can be published in such places as the *Journal of the Chemical Society*, *Transactions of the Faraday Society*, *Nature*, *The Philosophical Magazine*, *Heredity*, etc. Applied science on the other hand is likely to show up in the *Journal of the Society for Chemistry and Industry*, *Economic Biology*, *Mining Engineering*, *Tropical Agriculture*, *Surgery*, etc. A few journals such as *Research* and the *Journal of Polymer Science* tend to serve up a judicious mixture of both. Most fundamental work is published in journals which are distributed internationally, whereas only a small portion of the applied research carried out is ever published in any form.

A curve can be sketched describing the profitability of fundamental research if we assume not only that the supply of capital is held constant but also that the organizations for applied research and development are maintained as they are (Fig. 2). But here another factor becomes important—the publication of fundamental data within a year or two after they are obtained. When they appear in this country the results are also available at all research centres in the world. Thus the profitability of fundamental research depends not only upon the condition of applied research and investment in the home economy but also the condition in other advanced economies.

A close inspection of the existing situation reveals that very little of the fundamental research in Britain is relevant to the existing capacity to apply it so as to benefit the home

FIG. 2.

THE MARGINAL VALUE OF FUNDAMENTAL RESEARCH.



The role of fundamental research is that of providing greater opportunity for applied research. The current expenditures upon applied research in the three economies are assumed to remain constant as the outlay for fundamental research is varied. The curves rise slowly because a great many lines of fundamental research must be investigated before interaction becomes truly significant. The U.S. maximum is higher because its consumption of the products of modern technology is so much greater. The fact that the incremental value of U.K. and Swiss effort can become very negative is due to the practice of publishing basic scientific findings and the ability of competitors, especially the U.S., to make use of the results. The crosses represent an educated guess as to present outlay for fundamental research in the respective economies.

economy. Much of it is relevant to applied research carried out in the rest of the world. There the commercial processes are worked out, perfected, and put into operation. Then, if the sterling area wants any of the new product it will have to pay for it. It profits only as a consumer, not as a primary producer, and therefore comes off second best. If markets develop in the sterling area the prospective home producers must pay for rights and technical know-how. Thus on the whole it was judged that such fundamental research is a net economic loss.

Some economists may interpose the objection that it might be cheaper to pay royalties than to carry out the development oneself. The usual method of charging for such rights, however, preclude such possibilities from the outset. The usual charge, for instance, for a three-stage process of moderate complexity is 2-3% of sales. This is equivalent to the total outlay for all phases of research and engineering, but experience shows that even when all detailed research reports are also made available in the licensing agreement, a great deal of extra research work is necessary to adapt a process originally worked out in another economic environment to conditions that exist in the British economy and to keep it modernised. This frequently costs 1-2% of sales. Thus the licensee finds himself in the position of paying out 3-5% of sales instead of the 1-3% that is generally recognised to be sufficient if he carries out his own research and cross-licenses with competitors on an equal basis. This is to be expected. The firm that has monopoly rights with no clear-cut traditions to govern its behaviour, because by definition this is a new development, will be much more likely to conform to the classical behaviour of the monopolist—it will charge all the traffic will bear in order to maximize profits.

What is worse, British fundamental research is first applied primarily by the hard currency countries, especially the United States and Switzerland. This means that the sterling area must pay out hard currency for developments which stem from pioneering studies in Britain, or—and this is a process at least equally important—it will contribute to the synthesis of high quality substitutes for rubber, jute, tin, mica, etc., now being sold for dollars. The top rank quality in British fundamental research, ordinarily measured by the originality of conception and the reproducibility of results elsewhere, works to the detriment of the trade balance between the sterling areas and the hard currency areas. Thus one is forced to conclude that the marginal value of British fundamental research, as it is presently organized, is very negative, probably between two or five times the total marginal cost of salaries, equipment, and overheads.

It should be remembered that this judgment is still based upon the experience of one individual. There is a chance that imperfect sampling might lead to serious error. Therefore two investigations were made which were designed to uncover the exceptions to these generalizations. First an extended search of the literature and visits to many laboratories failed to reveal a single instance where British development of their own fundamental research would bring a substantial reward in terms of foreign markets or rights.[1]

The other investigation sought to make an evaluation of the effects of *current* fundamental research, since there was the possibility that fundamental research had adjusted to the changed post-war conditions in such a way that patterns observed during the present and immediate past would not be observed in the future. A means of collecting data would be invaluable. It happens, more by accident than by plan, that there is in the British economy an automatic sampling device. *Nature*, a weekly journal of science, has for more than a century published short notes briefly giving results of significant work, mainly in the British community of nations, but open at the same time to others. Scientists in most fields here have developed the habit, whenever a new and valuable finding is obtained, of rushing off a note to *Nature*. Then a year or so later a full account is published in some monthly or quarterly journal. As a sampling mechanism for current fundamental science *Nature* is obviously not perfect, but it serves as an excellent basis for making a first approximation.

Therefore a recent copy of *Nature* was taken at random and each contribution analysed from the point of view of an administrator in applied research whose organizational intelligence service apprises him of most new trends and the capacities of most research organizations. Would this contribution contribute in any way to current projects in applied research? Would it make more promising some old proposal

[1]A possible exception here may lie in the jet programme as a whole; this will be discussed later. In addition pharmaceuticals research seems to be selling as many new products and ideas abroad as the industry is buying. Chemicals, electronics, metals, plastics, fibres, and automatic machinery all had a few bright spots in the picture but none could be called "substantial."

for applied research? If so, where would projects be carried out? Where were the potential markets? What organization would therefore be likely to be interested? An attempt was made to apportion the amount of effort in the respective economies which would be affected by this particular revelation in *Nature*. In each case, of course, the approximation was very rough, but over the whole the error tends to be averaged out. This breakdown is shown in Table III.[1] The result

TABLE III

APPLICATIONS ANALYSIS OF A SAMPLING * OF CURRENT BRITISH FUNDAMENTAL RESEARCH

Origin	Field	Lag	Relevant Applications Research†
Brit. ...	Anti-biotics ...	0	90% U.S.
„ ...	Combustion ...	1 yr.	90% U.S.
„ ...	Chem. synthesis ...	1 yr.	50% U.S., 30% G.B.
„ ...	Chem. structure ...	—	—
„ ...	Chem. synthesis ...	0	80% U.S.
Austral.	„ „ ...	0	50% U.S., 30% G.B.
Brit. ...	Photography ...	0	30% U.S., 60% G.B.
„ ...	Low temp. phys. ...	5 yrs.	50% U.S., 20% G.B.
„ ...	Radiology	0	90% U.S.
„ ...	„	0	90% U.S.
„ ...	Cosmic rays ...	—	—
„ ...	Crystallography ...	0	80% U.S.
„ ...	Metallurgy	0	50% U.S., 20% G.B.
S. Africa	Horology	5 yrs.	20% U.S., 10% G.B., 50% Swiss
India ...	Applied Math ...	0	50% U.S., 20% G.B.
S. Africa	Phys. anthropology	—	—
Brit. ...	Anti-biotics ...	0	90% U.S.
U.S. ...	Vitamins	0	60% U.S., 20% G.B.
Neth. ...	Cancer	5 yrs.	40% U.S., 20% G.B.
S. Africa	Vitamin use ...	1 yr.	10% U.S., 10% G.B.
Hungary	Enzymology ...	1 yr.	50% U.S., 10% G.B.
Brit. ...	Biochem.	0	80% U.S., 10% G.B.
Brit. ...	Zoology	0	10% U.S., 50% G.B., 30% Scand.

Overall Average: 60% U.S., 20% sterling area, 20% remainder.

* Notes in the 12th November, 1949 issue of *Nature*.

† These are very rough estimates of the quantities of applied research (measured in numbers of professional workers employed) whose efforts might be affected by the new findings.

[1] A somewhat more refined technique based upon a broader sample and more complete intelligence of applied research organizations, their manpower and principal interests, should lead to a very useful quarterly index for estimating the impact of contemporary British fundamental research. Hitherto unnoted trends might be detected.

is quite significant. Thus if it is assumed that the productivity of applied scientists and development engineers is the same everywhere one must conclude that the United States will benefit about three times as much from current British research as does the whole sterling area. The present situation is actually worse than the figures convey because the productivity of applied research activity in this country is considerably poorer than in the United States due to shortages of materials,[1] instruments, and imperfect organization.

No matter which way the question is put or the investigation is carried out one must still come to the conclusion that British fundamental research is of far more value to the United States than it is to the sterling area. Nevertheless, from the American point of view, the British contribution to their economy is hardly more than trivial. This is reinforced by the realization that most fundamental research is of the sort that, if it is not done this year, would be done elsewhere within a few years. There is practically no loss, merely a delay. The contributions of British science are therefore respected individually, especially for their elegance, but as a total they make little difference to the massive economy which has been erected upon the North American continent. The unequal flow of fundamental data ready for application is not of much consequence there but it is quite important to the stability and independence of the British economy.

V. New Directions for British Research.

The immediate reaction of a crisis-obsessed politician or a harried planner would be to reduce the expenditure upon fundamental science. They naturally conclude that there has been too great an outlay for pure science and too little in the applied area. The analysis may be correct, as far as it goes, but such cuts would not have the desired effect. The reasoning

[1]When working as an applied scientist in Great Britain in the summer of 1949 it was very much a surprise to find out that many materials routinely ordered from a supplier in the U.S. must be manufactured in the laboratory or the shop. Delays in delivery of ordered components are still quite great, and many expensive instruments which speed up research are either unavailable or inconveniently located.

does not take into account the great difficulties which are encountered in building up a reserve of advanced scientific personnel. This feature might be best illustrated by comparing the time it would take to double the number of the respective skilled specialists employed in integrated research and development.

		Doubling period
Theoretical scientists...	ca.	15 years
Experimental scientists (Ph.D.)	ca.	12 years
Laboratory scientists (B.Sc.)	ca.	10 years
Laboratory assistants	ca.	5 years
Glassblowers, technicians, etc.	ca.	5 years

Thus the rarest skills essential to an improvement in technology already exist in Britain and the Commonwealth at large. Such advantages should not be thrown away ; they should be fitted into every scheme for expanding and advancing research and development.

The present state of British research presents a challenge both to technical administrators and to the government itself. Somehow a formula must be found which takes advantages of the excellences and minimizes the deficiencies of both fundamental and applied research. This whole section of the economy should be eased into a position where opportunities opened up by fundamental research in other countries are grasped as rapidly as other countries borrow from British findings. Such a change in viewpoint is not accomplished easily by people who have grown up in the present system and have helped, in a small measure, to create the existing patterns.

Too frequently one comes across the highly educated person who has "the formula" for solving Britain's technological and economic problems. There remains only one difficulty—one class or segment of the population must alter completely its traditional mode of behaviour. This group may be the directors of industry, the applied scientists or engineers, the factory workers, or any of a half-dozen others. Since there is no sign that this blameworthy group is going to change in the necessary fashion then the man-with-the-formula absolves himself of any responsibility—the fact that people do not

behave reasonably and follow his exhortation is no fault of his. The problems therefore remain, aggravated by lack of remedial action, and beclouded by competing exhortations.

It is clear that all groups must give way a little, those whose training is broadest and most flexible may have to yield more than the rest. But talk will not accomplish such a widespread adjustment ; there must be some new, unifying, readily agreed upon conceptions and some definite programmes of recognizable importance which act as levers in forcing the necessary accommodations.

The answer cannot come simply by imitation of those countries which have used science successfully. Great Britain doesn't have the numbers of scientists at its disposal that other major industrial centres have, and it would take decades to achieve such levels. Switzerland for instance has almost three times as many fully qualified scientists and engineers in proportion to its population. The proportions of qualified men in Germany and the United States are similarly overwhelming. In those countries a pattern of research and development has arisen which uses seven or eight graduates in the more specifically applied aspects for every scientist pursuing fundamental investigations. In Britain the present ratio is about three to one. This is a relationship which cannot be changed very rapidly.[1]

Every element exists in the present British culture which would make possible a unique type of applied research. A much larger portion of the training in science here emphasizes the theoretical rather than the empirical approach. Thus there is always an impulse to use chemical kinetics, thermodynamics, hydrodynamics, or physiology in the solution of problems. There are certain fields of applied research which are most easily penetrated with such skills and there is no reason why well financed and carefully organized projects

[1]It was quite a revelation to an American to see what a large fraction even of the organizations directed to applied research were carrying on activities that would be classed as "pure" research. This was still more true of the educational institutions for applied science and technology. The figure of 25% in fundamental research of all kinds is a private estimate made because official figures seem to be misleading on this score.

should not make the British pre-eminent in many of those areas. They present problems where mass attacks in the laboratory and testing station, such as organized in the United States or Germany, are likely to be cumbersome and expensive.

But practical problems should not be chosen purely because they are amenable to attack with theory. The economic repercussions should also be considered. Would a successful development in this direction improve the competitive position of the country as a whole? Some would not, while many others involve quite large risks.

A well-publicized example was brought to light this year which illustrates the potentialities of the theoretical approach. By combining advanced metallurgy aerodynamics, thermodynamics, and structural engineering it was possible to build several jet prototypes with characteristics considerably in advance of those exhibited elsewhere. The jets have yet to go into production, and it will be five years before one can say whether the development will pay for itself; nevertheless it has been demonstrated that a carefully planned development starting from fundamentals has put the British at least on a par with the United States and probably ahead—even though the latter has research resources in the jet field which are perhaps five times as great.

The jet project was designed to make the sterling area independent of the dollar area in commercial aircraft, an item which has been a considerable drain upon hard currency reserves. The risks of total loss however were very great because this project went into a competition in which the United States held most of the trumps. There are other fields, just as important to the overall economic picture, for which this is not the case. Pre-eminence in them would pay very well, and could be maintained more easily.

It is best to choose fields and problems where the United States is not able for one reason or another, to use its own research. Then the British effort would not only have the world market open to it but also would have sufficiently low costs to export special items into the American market itself.

Examples of what is meant can be quoted for several various kinds of research.

Food. North America expects to be embarrassed for decades to come with food surpluses. Radical methods for increasing the efficiency of food production would not be encouraged there although they would be welcomed in practically all over parts of the world. New discoveries in microbiology over the past decade made possible the full mechanization of food production—a continuous processing of sunlight, air, and water into ready-to-eat victuals.[1] It would be necessary to carry out the development in stages, making sure each stage pays for itself, but such an eventuality seems practically inevitable.

These advanced developments in food technology will require the building up of a cadre of "missing specialists" who can undertake studies in the psychology of food prejudice, the chemistry and physiology of flavours texture analysis, and a group of allied activities.[2] It is not suggested that Britain should become a food fancier, *per se*, but that it should move first into a position where it could in the event of emergency, solve most of its own coarse foodstuffs problem and be able to sell engineering and construction services for the manufacture of both animal and human foods. This approach to food production is the only one which appears to come close to being able to cope with long term global needs. It is one in which the British scientists and engineers have already shown some initiative and originality but progress was stopped due to ineptitude in marketing. The competition is expected to be mainly German and Japanese.

Fibres and Garments. The world fibre picture is becoming more favourable to the introduction of synthetics than at any time in the past. Wool is likely to be in short supply now that the stockpile has disappeared and the system of life symbolized by the shepherd has gone into decline. Wool will therefore

[1]H. C. Yin, "Microbial Farming," *Econ. Botany*, *3*, 184 (1949).

[2]R. L. Meier, "Industrialization of Photosynthesis," *Chem. Eng. News*, *27*, 3112 (1949).

very likely remain expensive. Warm fibres can be manufactured from coal, lime, salt, air, and water—all in plentiful supply in Britain—at less than half the cost of natural wool. An alternative low cost source is ground-nut protein.[1]

On the other hand cotton, the cheapest natural fibre for garment uses, remains primarily a hard currency raw material maintained at an artificially high price. Rayon yarn can displace the cotton in many markets and the number and size of the markets is expanding rapidly. If rayon properties can be cheaply modified and improved then it is very likely to become the dominant low-cost fibre.

Several British-sponsored entries into the fibre field are being prepared at the present moment. They seem to be projects worth encouraging and expanding. Each will add new properties and new possibilities to textile weaving and finishing.

The fundamental approach that has so far been largely neglected is the design of garments from the point of view of comfort analysis.[2] The development of the industry has heretofore been based upon craft techniques which were empirically evolved. We have learned much by this accumulation of experience but still encounter considerable discomfort in the tropics, or the arctic, in draughty houses or in centrally heated ones. The new improvements are not likely to be made empirically because popularity is too complex an index to contribute anything more to relative comfort. The whole field of clothing has much to gain from radical new developments stemming from fundamental insights and relatively little from accepted textile technology. In passing it should be noted almost everything that has been said about fibres, textiles, and garments applies equally well to the leather and foot-covering fields, except that the latter has made less progress.[3]

[1] C. W. Bendigo, "Newer Synthetics," *Textile World*, *99*, 111, Sept., 1949.

[2] D. H. K. Lee, H. Lemons, "Clothing for the Global Man," *Geograph. Rev.*, *39*, 181 (1949).

[3] J. R. Hoover, "Synthetics Invade the Leather Market," *Chem. Eng.*, 138, June, 1949.

Metallurgy. The uses of metals are dominated by the cheapness and adaptability of iron as compared to any other metal. But iron ore reduction is based upon the accessibility of coking coal, a resource which is difficult to find in most places in the world. All attempts to replace coke hitherto have failed except, under special circumstances, the electric furnace methods. Even electric reduction requires coke—but only half as much and of a poorer quality. In addition, it seems to be economic only with low-cost hydro-electric power.

However, important improvements in the chemical synthesis of hydrogen from low grade coal, oxygen, and steam[1] have now made another approach economically promising. This would make it possible to transform a bulky batch type process into a streamlined continuous flow process, using hydrogen and high grade ores along with a considerable amount of electric power.[2] The United States has little interest in the possibilities because it has 200-500 years supply of low cost high grade coking coal, as compared to a 30-80 year reserve in Great Britain. Many other parts of the world will have to depend upon such an approach, if they are to have any iron and steel industry at all. The revolution in techniques that is foreshadowed can hardly be underestimated. An opportunity exists for the moment for the British to become leaders in the design and engineering of new continuous flow processes which will have to be developed in any case in the long run. It is a task best handled by physical chemists and chemical engineers, up to the point one has newly reduced liquid metal, because they have been responsible for present experience with fluidization, heat transfer, electron transfer, and surface chemistry.

Automatization. Many production processes are now reaching a state of development and internal control that permits the virtual elimination of operating labour. Some

[1] L. C. Skinner, R. G. Dressler, C. C. Chafee, S. G. Miller and L. L. Hirst, "Thermal Efficiency of Coal Hydrogenation," *Ind. Eng. Chem. 41*, 87 (1949).

[2] "The Pluro Process," *Fortune, 40*, 16, Aug., 1949.

fully automatized plants have been put into operation and the economics [1] indicate that a very large share of production will probably follow in the same direction. This is an area best suited for instrument makers, electronic and other advanced engineers, physicists, and applied mathematicians. Thus it is well fitted to the special theoretical capacities of British scientists.

Remarkably enough, it is also a field where skilled technicians (another distinguishing characteristic of the British industrial pattern) can be used to advantage. If only a few of a kind are to be constructed then British costs will tend to be quite a bit lower than American when competing for the same job. It seems likely that several niches can be carved in this section of industry which would be secure against any kind of competition.

There are other directions less sweeping in their potentialities which are also likely areas to achieve a recognized world supremacy. Some examples may be found in building technology, water transport, electronic communications media, printing, etc. The criteria for choosing these prestige programmes should be :

1. The field should be such that rapid advances can be made with theoretical science ;
2. It should draw upon indigenous resources ;
3. It should fill a recognized need and aim at a sterling market as well as export outlets ;
4. The overall use of the developments should be very wide so that there are good chances for extensive growth of the newly founded industries ;
5. It should not require the expansion of a heavily subsidized industry or social service, unless it is ascertained that such losses are easily made up ;
6. Research should be so gauged that the first returns can be realized 5-15 years hence. There will, of course, be unexpected returns in addition to the programmed results, but these cannot be depended upon.

[1] A. Brothman and R. V. Ramani, "Robotization of Process Plants," *Chem. Eng.*, 103, Nov., 1949.

7. The effort needed to achieve supremacy in a specific avenue of research should not require a major portion of the local talent in this field. A large share will be needed to handle routine improvements of existing products and fringe opportunities to the new development.

There is nothing striking or original about these criteria—they are merely common sense—but it is difficult to get committee or group decisions anywhere to make rational sense. The four proposals suggested in some detail are based upon considerable exploration and study searching for flaws. None have yet developed which would seriously obstruct the technical solutions. No doubt there are a half-dozen other directions which would fit the criteria just as well.

Thus one can see that a brilliant and productive future for British science and engineering could well be worked out, but this future does not quite lie in the direction in which the scientists are presently proceeding. *The change that is needed is primarily in the field of organization.* The new direction must rest heavily upon the strong features and lightly upon the weak points in British research and development. The co-ordination and integration must be carried out by those who understand intimately British capacities and susceptibilities. An outsider can analyse, and perhaps even produce a paper synthesis, but he is unable to contribute to the real job. This effort must come from within the ranks. Fundamental science cannot flourish while remaining oblivious to its immediate environment. If it continues to work to the economic impoverishment of its own society at a time when the loss can be ill afforded then the chances of its survival in a free and vigorous state are poor.

The universities would not be much affected by a change. Their researches, up to the doctorate at least, are limited in scope and capacity. The role of the universities could be extended only to the training of missing specialists and larger numbers with a broad inter-disciplinary training. But most of the research stations, the colleges of technology and applied

science, the research associations, and the theoretical sections of large industrial laboratories can and should be directed to programmes of the sort outlined earlier. At present a large share of the funds allotted have one or another kind of tag attached to them (*e.g.* the common cold, observations of double stars, hydrocarbon chemistry, animal breeding, etc.) and apportionments are made largely on the basis of petty academic and intra-governmental politics. It would not hurt to change some of the tags to projects aimed at technical pre-eminence which might also be profitable. The principal idea is to generate opportunities which can be readily grasped and developed. The absolute purity of science in Britain may be prostituted but the flavour and vitality could be preserved to become the basis of a productive new era.

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The Dollar Gap

I.

The cessation of Marshall Aid after 1952 will enforce balance in the British dollar accounts. To estimate the level at which balance will finally obtain is very nearly impossible ; it would entail exceedingly hazardous predictions of the balance of payments over a number of years. But the magnitude of the adjustments that are called for is known, and it is possible to reflect on the ways that these adjustments may take, and on the burdens which they may place on the home economy. The Government's estimates, which we shall present later, must be taken merely as an experimental basis and as a frame of reference for these observations.

The gold and dollar deficit of the sterling area was estimated at $1,530 million last year. The elimination of this gap will mean two things ; first, the dollar disbursements of the sterling area as a whole will be scaled down to dollar earnings unless there is new outside investment in the area (or, for a while, new loss of reserves). And secondly, the United Kingdom will be able to expend on imports no more than its export income *minus* home financed investment overseas. From the second requirement one can obtain the direct or primary cost to the home economy of achieving balance. In the Long Term Programme submitted to O.E.E.C. in October, 1948 (Cmd. 7572), the United Kingdom has declared that after 1952 it will need a current account surplus of about £130 million to provide for the repayment of war and post-war debts and for new investment abroad. If the outflow of capital, which under various headings was as high as £300 million in 1949, could in effect be reduced to this much lower level, then the difference between it and the present balance on current account would measure the value of the additional resources that must be freed for exports if imports are to be maintained. The implication is that all those exports (in excess of the £130 million p.a.) which in recent periods were financed by drawing on old or on newly created sterling

balances are converted into cash exports, and that these, in one way or another, fetch dollars. If this demands more price concessions, or if for other reasons the terms of trade deteriorate, the cost of adjustment would be so much larger. But except on very extreme assumptions, the primary burden should be small when related to productive capacity : a matter of about £200 million on the basis of the 1949 payments position, and of less than that after the improvement that has occurred in the meantime. Internally the task is to withhold the equivalent amount from domestic use without retarding productive investment which is essential to balance in the long run.

The prospect of the U.K. selling this extra amount depends on economic stability in the rest of the world and on the competitiveness of U.K. goods in displacing foreign manufactures. In countries which did not devalue in 1949, our competitive position has now improved by something like 40%, less whatever increase there may be in our export prices as sterling prices of raw materials rise.

There is little evidence on the elasticity of demand for British goods. Such evidence as there is suggests a low figure on the average. But much will depend on the strength of demand for individual products which in imperfect markets can be influenced by sales efforts. Probably, if an export drive is to succeed, improvements in the technique of selling British goods to foreigners is even more important at this stage than considerations of price.

One point can perhaps be made which on a longer view may be of great influence on Britain's competitive position particularly in relation to the United States. If one takes Rostas' estimates of output per man-hour in various U.K. and U.S. industries before the war and compares their relative "productivities" with differences in hourly wage earnings in these industries, one finds that among the products for which data are given it was primarily engineering products of various types that before the war were produced more cheaply (in terms of labour cost per unit) in the U.S.A. than in the U.K. If one can assume that the *gradient* of productivity has not

changed very substantially, then many branches of this wide group of industries (producing not only machinery but durable consumer goods) which have so far been at the margin of advantageousness, or on the wrong side of it, should now be on the right side. One would not place too much confidence in this rough comparison, but it is not unlikely that on a longer view this will prove to be the most important change. It is very relevant to competition with the U.S.A. in outside markets which will have to concentrate largely on competitive exports of engineering products. In textiles, which play a more subordinate role in U.S. exports, Britain's advantage over the United States may be large, but the advantage over producers of other countries is much less assured if we look a little ahead.

II.

The dollar gap itself can be closed in various ways. First, by selling more to the U.S.A. and to other dollar countries. Secondly, by shifting imports away from the dollar area, and buying more from and selling more to other countries. Thirdly, by earning dollars outside the dollar area, from export surpluses with third countries, including the overseas sterling area. These policies are not mutually exclusive altogether (though they conflict at certain points), but they are very distinct nevertheless and may hold out uneven prospects of success. The third approach stands out in that it would restore, or conform more nearly to, the traditional system of triangular settlement. It will be one of our conclusions, however, that the scope for this policy is relatively limited if we think in terms of a few years.

Let us first consider the prospects of earning dollars from third countries. At first glance this should seem easy. In 1949 the United States exported about $6,500 million of finished manufactures. If the U.K. can persuade third countries to buy manufactures from her instead of from the United States, she will get the dollars that would otherwise be spent on U.S. goods.

The position is not, however, quite as simple as this. A part of the U.S. exports is financed by countries running down their reserves and by Government aid from the United States. In 1949, over $5,000 million were granted by the U.S. Government to other countries, the greater part under the European Recovery Programme. Although this was not mainly spent by the recipients on U.S. manufactures, it helped to sustain the demand for them throughout the world. As U.S. aid and spending from reserves cease, a part of U.S. exports will disappear automatically. In this sense, the displacement of U.S. goods looks after itself as long as the world shortage of dollars lasts. Recent developments are evidence : from 1948 the lack of finance to maintain purchases in the United States has compelled one country after another, particularly in Latin America, to divert purchases to other areas, among them to the United Kingdom. Yet this process did not secure more dollars to the United Kingdom, nor will it produce them as it continues. It will enable the United Kingdom to buy more goods outside the United States, but dollars can be earned only from countries that choose to buy British instead of American goods for reasons other than the lack of dollars. Moreover, as the shortage of dollars compels countries to cut their imports from the U.S.A., those U.S. imports that are left are the least indispensable, and the task of displacing them with U.K. goods grows harder.

Which countries are the greatest earners and users of dollars ? The following is a list of the main exporters to and importers from the U.S.A. in 1949 :—

THE LEADING COUNTRIES IN U.S. EXPORTS AND IMPORTS (1949)
Monthly Averages. $ million.

	Exporting Countries.		*Importing Countries.*	
1.	Canada	126·0	Canada	161·6
2.	Brazil	46·0	Germany	68·4
3.	South Africa	43·0*	U.K.	58·4
4.	Cuba	32·3	Venezuela	43·2
5.	Venezuela	23·3	France	41·4
6.	India and Pakistan ...	22·2	Japan	39·0
7.	Mexico	20·3	Mexico	38·5
8.	Colombia	20·1	Philippines	36·6
9.	U.K.	18·9	Brazil	31·8
10.	Philippines	17·2	Cuba	31·7
11.	Brit. Malaya	16·3	India and Pakistan ...	24·9
12.	Chile	12·7	Colombia	14·7

* Including the value of newly-mined gold.

The left-hand column is the more important when we want to find out where dollars can be earned through third country trade (in a multilateral trading world, of course, one would have to probe further into the flow of dollars). The list shows that the principal dollar earners are Canada, Latin America and the overseas sterling countries. In 1948 the order was similar, with the main exception that Brit. Malaya occupied a higher—the seventh—place. We may begin with the sterling countries.

The overseas sterling countries have in recent years imported large quantities of U.S. manufactures. In 1948 (and in 1948/9) these imports were between $750 and $1,000 million. In relation to this figure the dollar deficit of the sterling countries—which, in effect, was financed by the United Kingdom—was small allowing for the sale of new gold to the U.K. : about $180 million in 1949 and only a little over $100 million before the recent U.S. recession.[1] The position then was that by taking over some 10 to 20% of the American share, the United Kingdom could restore balance in the dollar accounts of the overseas sterling area. Any further reduction in the American share—or improvement in export income—would transform the area into a net earner of dollars. However, the actual extent to which the dollar outlay of the overseas sterling countries is now being reduced does not depend entirely upon the competitive displacement of U.S. goods. For the time being, it also rests on the agreement of these countries to effect administrative cuts in dollar imports proportionate to those that were announced in the United Kingdom ; and it rests in addition on the direct control which the United Kingdom can exercise, within limits, over the dollar expenditure of the sterling area as a whole. The importance of these circumstances emerges from the estimates which the Government submitted to O.E.E.C. in December, 1949. These estimates imply at one and the same time a

[1]It is true that these figures understate the deficit of the rest of the sterling area. Certain dollar payments, which are properly chargeable to the account of the overseas sterling countries, are attributed in official statistics to the U.K., while others are shown on the account of the sterling area as a whole.

decline in the U.K.'s trade surplus with the other sterling countries, and a reduction in their dollar imports. Thus more American goods are to be pushed out of these markets than are to be replaced by British goods; in other words, the sterling countries are expected to do with a smaller volume of total imports and to spend less out of balances and loans. This is not only a question of lower rates of release of war-time balances. There is the case particularly of South Africa where the scale of dollar expenditures up to 1948 was almost certainly influenced by new capital transfers, and where the United Kingdom, but for these transfers, would have obtained gold for its trade surplus.[1]

U.S. trade statistics for recent months show that the overseas sterling countries have in fact reduced their dollar imports more heavily than was anticipated last summer. It appears that the change in relative prices due to devaluation has been effective as an additional check on their dollar expenditure. If the sterling countries can be induced to continue these economies, the pre-war triangle of U.K. trade will be restored, at least during periods when the American demand for the primary products of the area runs high. The access to American markets, which the United Kingdom can obtain in this way, will still be small, of course, in terms of goods if we apply pre-war standards. It is inevitably small even in the longer run because of the fall in the real export income of the sterling area whose most important dollar commodity—gold—with an output of about $400 million, now buys in American markets perhaps a third of what the output of $550 million bought before the war. But this is a different matter. What concerns us here is the situation as it presented itself only a short time ago. The Government programme gives a tentative figure of $360 million to indicate the possible

[1]The new trade agreement with South Africa marks a decisive change in that South Africa from now on will pay in gold for all "essential" imports, independent of her need for sterling. The amount of gold, which sterling and other countries can earn from South Africa, will depend then on their competitive power in regard to such essential imports and, of course, on the total amount of licenses issued for them, *i.e.* on the value of S.A. gold output *plus* hard currency earnings which will be reserved to meet these import needs.

increase, between 1949 and 1952, in the balance of payments of the overseas sterling countries with the dollar area. This would be a very significant change, to which dollar savings arising from other transactions of these countries but shown on different accounts, are likely to add. Nevertheless, the figure conveys that the closing of the gap will demand substantial additional improvements in other directions.

III.

It is more difficult to earn dollars in other "third countries" although trade with most of them is likely to become more intensive both ways.

That exports to Europe are not likely to fetch dollars for triangular trade is fairly clear. Most European countries earn few dollars, and what they earn is certain for some time to fall short of minimum requirements. But the United Kingdom can trade in from Europe, including Eastern Europe, more goods of which some would otherwise have to be bought from dollar sources (timber, pulp and paper, scrap iron, certain steel specialities, and various foods). Moreover, there is the trade with those countries in Europe—Belgium, Switzerland and Western Germany—where the operation of the gold clause in Britain's payment agreements has caused in recent years a rather heavy drain on the sterling area's dollar reserves. New import restrictions, which were imposed last summer (notably on imports from the Belgian monetary area), and the increase of exports after devaluation have in the meantime stopped this drain. It is worth noting that these payment agreements have had a rather restrictive effect on trade, and one should not therefore assume too readily that they show how dollars can be earned in transactions with Europe.[1]

There remain the Latin-American countries of which some are large dollar earners. These are the markets, apart from the sterling area, where competition for dollar trade seems to offer most scope. But consider the typical case of

[1]For a discussion cf. E.C.E., *Economic Survey of Europe in* 1948, pp. 136 ff. and 161 ff. Also T. Balogh, in the Bulletin of *Oxford Institute of Statistics*, February and March, 1949.

Brazil which is outside the dollar area.[1] Brazil developed a growing dollar deficit in the years up to 1948, when the expansion of export sales to the United States provoked an even greater increase in imports. This sequence, which is quite frequent in certain developing countries, is based on the combination of high export-induced investment with low savings and a high propensity to buy American goods.[2] However, the discrepancy between dollars currently supplied and dollars used could not last very long. In many Latin-American countries, including Brazil, the dollar scarcity in this statistical sense has subsided for the time being. But the change has been brought about mainly by more stringent import restrictions and exchange controls, which set the conditions under which Britain and other countries have to compete for dollars in these markets : it is a question of displacing U.S. goods from the restricted list of dollar imports which are kept below the level of the prevailing demand. (In this sense the dollar remains a scarce currency). Nor are these restrictions exclusively directed against imports from the United States. Intensive internal development programmes have given rise in wide parts of Latin-America to a general shortage of foreign exchange (reflecting a shortage of capital), and this limits the amounts, and determines the kinds, of goods that are admitted. Thus, for any short period of time, British exports to the non-dollar countries of Latin-America mainly depend on the availability of *sterling*. This applies particularly to Argentina which, in contrast to Brazil, has never been a large dollar earner but has traditionally relied on the conversion of sterling surpluses into dollars to cover her trade deficit with the United States.

Conditions are different in the dollar area of Latin-America. With these "American Account Countries" Britain has a big

[1]The following remarks are mainly concerned with these non-dollar countries of Latin-America which comprise, apart from Brazil, Argentina, Chile, Uruguay, Paraguay and Peru. Trade with these countries has involved agreements designed to eliminate the need for dollar settlements.

[2]This is the sequence described by C. P. Kindleberger ; cf. his recent discussion with A. I. Bloomfield in *American Economic Review*, September, 1949.

deficit,[1] and as we are confronted there directly with the dollar gap, the problem of third country trade does not arise in the same way. We shall briefly refer to this group in a different context.

IV.

It will now be clear why balance in the British dollar accounts will be impossible without a very large improvement in the direct balance of U.K. trade with the dollar area. As far as third countries are concerned, the United Kingdom is likely to earn dollars in the sterling area but there will be little from others. Trade with others should be of increasing importance (as we shall see) but not because it will give access on a substantial scale to American markets.

From this conclusion—the need for direct balancing with the dollar area—two others follow almost immediately. The one is that the main adjustment must come from a change in the area distribution of U.K. *imports*. The fact that the United Kingdom's imports from the dollar area are so much larger than exports, is nearly—though not quite—sufficient to show that the dollar export drive cannot be so decisive, at least not within the relatively short Marshall period. The matter involves judgment about the degree of response of American import demands to the lower level of dollar prices, and about the extent to which these demands can be influenced by sales efforts. Conditions vary in the different countries of the dollar area. They are probably most favourable in Canada where the non-price obstacles to entry are smaller than elsewhere, and where the increased competitiveness of engineering products should help to obtain a higher share in the market. If historical experience is a guide, the price elasticity of the Canadian import demand is extraordinarily

[1]The main deficit is with Cuba. There is also a deficit with Venezuela, though not on visible trade account. But Venezuela receives from the United Kingdom large dollar payments partly on invisible account, for the production expenses of the British oil companies, and partly indirectly through payments to the Netherlands West Indies which are passed on to Venezuela for the purchase of crude oil (processed in Curacao).

high compared with that of any other country for which we have such information.[1]

Conditions are less favourable in the Latin-American dollar countries. Their capacity to increase total expenditure on imports is very limited, and prospects mainly depend on the displacement of U.S. goods. But the United States has a very strong hold on these markets which is not just a matter of price. Proximity, established trade connections, and the fact that many Latin-American companies are subsidiaries of U.S. firms (with a natural propensity to buy in the United States)[2] give U.S. manufactures a preferred position.

Much more decisive, of course, is competition for trade in the U.S. market itself where in spite of the—very familiar—difficulties it should not be impossible to tap elastic consumer demands, or, in time, to create demands and to exploit the special competitive position of certain export commodities. If we go again by historical experience, U.S. and Canadian demand (for manufactures) between them should have sufficient elasticity to carry British exports beyond the break-even point Thus, provided that American prosperity continues, it is not unreasonable to expect higher dollar exports, in value, than in the best period before the recession. Yet a 10-15% further value increase may require something like a 50-60% expansion over pre-recession volumes; these are the Government's illustrative figures for exports to the dollar area as a whole by 1952. Even that expansion would still leave about 90% of the dollar deficit of well over $1,000 million which in 1948 and 1949 was directly attributed to the United Kingdom.

The British Government has concluded—and this conclusion seems inescapable—that the first major burden of adjustment must fall on dollar imports. Their intended cut

[1] Cf. Tse Chun Chang, "International Comparison of the Demand for Imports," *Review of Economic Studies*, 1945-6.

[2] *The Board of Trade Journal* contains in reports on Latin-America frequent references such as this: "The non-British companies (in Venezuela) obtain their supplies almost entirely from the United States, and a great sales effort, even with the aid given by devaluation, would be needed to persuade them to change their habits." 10th December, 1949.

from roughly $1,600 million to not much more than $1,000 million by 1952 is the decisive change through which the Government hopes to get within striking distance of direct balance in the U.K.'s visible trade with the dollar area; measures of a similar nature in connection with the oil programme would show on invisible account and in third country payments.[1] Now, one ought to note that these cuts are not intended to cause a decline in the total volume of imports; rather they represent a shift in the sources from which imports are drawn. This has an important implication. For it follows that as the balance of dollar trade increases with the diversion of imports—a change very noticeable already in recent months—the former trade surplus with the non-dollar rest of the world is bound to decline. In other words, equilibrium in the British dollar accounts almost of necessity carries with it an all-round tendency towards balanced trade. Of course, this would not extend to every single country—nor would it involve increasing reliance in the future on bilateral arrangements—but the dominant tendency is clearly exhibited in the following Government estimates, particularly with respect to visible trade (the strong increase in invisible income is partly offset in the dollar accounts by rising debt charges; Cmd. 7862, p. 23).

U.K. BALANCE OF PAYMENTS ON CURRENT ACCOUNT WITH THE NON-DOLLAR COUNTRIES

	£ million	
	1948/49	1951/52
Imports	1,433	1,846
Exports	1,547	1,772
Balance of trade	114	— 74
Net invisibles	171	278
Total current items	285	204

[1]The dollar cost of oil supplies to the Sterling area is larger than the cost of any other item. It is officially estimated at over $600 million, though American sources give a somewhat lower figure. The new policy of requiring importers to take all the available sterling output is expected to achieve a dollar saving of up to 10%. Savings are also anticipated in the dollar expenses of the British oil companies.

The export figures, as given here, imply a volume increase of about 8%. This seems little compared with the assumed 50% expansion in the volume of dollar exports. But one must remember that sterling balances are to be released at a lower rate ; that the quantum response to devaluation of the demand for British goods from non-dollar countries—or, more precisely, from countries that depreciated their currencies in 1949—cannot be as large as that from dollar countries (where British goods have become absolutely cheaper), and that foreign competition, notably from Germany and Japan, is bound to make itself felt more strongly in non-dollar countries than in the American market which is more a market for specialities. Yet an increase of exports to the non-dollar countries is very essential : exports may not earn dollars there but they are needed to fetch the larger quantities of imports which are to be obtained from non-dollar sources.

This, then, is the general picture. Its most striking aspect is the near-balance of visible trade with the dollar area which conditions seem to enforce on the United Kingdom. If we may refer again to the Government programme, by 1952 about 80% of all dollar imports are to be covered by direct exports to the dollar area (as against 29% before the war), and it is pointed out that ultimately "something like 90% of imports, or even more" will have to be paid for in this way.[1] Closely connected with this development there would be a tendency towards balance with the other major groups into which the trading world, for historical or currency reasons, at present divides. (It is hardly necessary to stress that this tendency is perfectly compatible with greater freedom in the use of sterling in international payments outside the dollar area).

V.

A policy along these lines, including as its strongest component a change in the sources of imports, makes sense only if it is held that the scope for dollar earning through third country trade is limited. The first part of this article reached

[1] Cmd. 7862, p. 6.

this conclusion. It was based on the assumption of a continuing world shortage of dollars which would make it difficult to squeeze out large dollar surpluses in third countries (large, that is, in relation to the British dollar deficit). The assumption of a continuing world shortage of dollars is important: naturally, the prospects of indirect dollar earning will be profoundly affected by changes in the total supply of dollars. This is a highly speculative subject, on which we should not like to make dogmatic statements; yet we cannot completely ignore it. What, then, can one say about the probable supply of dollars in the near future?

When Marshall aid ends, the supply of dollars will shrink by an equivalent amount unless new grants or loans are given (which we cannot assume). It will further shrink because of rising interest and amortisation payments on American loans which will be well over $2 billion after 1951, as against just over $1 billion now. A part of these interest payments will "solve its own transfer problem," namely in so far as interest received is spent on imports or on goods formerly exported. But this is a very small part; the greater part will represent a net reduction of the world supply of dollars over and above the loss of Marshall aid. But there are offsets to these losses. There is first the "normal" increase in imports as real income grows, though not too much can be expected on this account. For U.S. economic activity is running already at a high level, and the propensity to import, at the margin, is very low. It was low already before the war—the estimates vary between ·07 and ·10[1]—and has been approximately halved since.[2] This also applies to the field of raw materials where the development of home resources (or other circumstances not fully explained) have reduced the marginal ratio of imports to income even more than in other fields. We cannot say to what extent this is due to purely transient factors, though it is certain that they have not operated in one way only:

[1]Cf. Chang, l.c. He gives an estimates for the whole period 1924-1938, whereas J. A. Adler ("The U.S. Import Demand," *Amer. Econ. Review*, June, 1945) divides up the period, which partly explains the divergent estimates.

[2]Cf. J. A. Hargreaves, "U.S. Import Propensities since the War." Bulletin of the *Oxford Institute for Statistics*, January/February, 1950.

American purchases of raw materials were swollen in recent years by purchases for the strategic stockpile. However that may be, some increase in U.S. import demands should occur with rising income if American prosperity continues (as we must stipulate). In addition one ought to allow for a price—induced upward shift of the U.S. import demand for finished goods, as a result of the recent devaluations. Although British exports, being more diversified, may be better placed in this respect than the exports of most European countries to the States, a general increase on this score is a plausible expectation. It would be futile to attempt a quantitative estimate which could be no more than guess-work.[1] But it is quite clear that it will take some time to recover the loss due to interest and amortisation payments alone. And there is no known fact that would warrant an estimate of an income-induced or price-induced increase in U.S. imports sufficient to offset in addition the whole loss of Marshall dollars within the short period of a few years.

Nor does it necessarily make a difference to the world shortage of dollars if we take a longer view. For the secular increase in U.S. income and imports *by itself* changes nothing unless it is accompanied by either of two changes. The one would be higher U.S. imports for any given level of income. To some extent this is a question of tariff policy. There are reasons to believe that reductions in rates which would alter the relationship between the foreign and domestic cost of *specific* commodities could exert an influence.[2] And one can think of other internal developments in the United States, such as an inflation of demand, that would have similar effects. Alternatively, the main adjustments must be made in other countries where it is a question of lessening the dependence on American supplies. It is beside the point to say that the observed statistical dollar shortage—measured by the U.S.

[1]There are wide differences particularly in the estimates of future American tourist expenditure, which is one of the largest U.S. 'imports.' For a recent analysis cf. K. M. Longmore, "American Tourist Expenditure and the European Balance of Payments, Bulletin of the *Oxford Institute of Statistics*, March, 1950.

[2]Cf. J. A. Adler, l.c., and A. R. Prest and A. D. Roy, "The U.S. Tariff," *London and Cambridge Economic Service*, February, 1950.

export surplus—will disappear in any case. The dollar problem remains critical until the rest of the world can scale down its dollar requirements without having to curtail total imports and consumption by an equivalent amount. Thus, if we exclude speculations on changes in American policy (including lending), the problem reduces to the building up of alternative sources of supplies. The tentative conclusion which we have reached so far, therefore, stands.

The conclusion is this. As long as there is a world shortage of dollars, the prospects of earning dollars in other countries, of which most have a dollar shortage themselves, are limited. There are possibilities there, particularly in the Sterling area. They are by no means insignificant, and may offer more scope, in the short period, than direct exports to the dollar area. Yet these indirect dollar earnings through third country trade cannot close the gap, not even the greater part of it, as long as U.S. import demands (from whatever part of the world) do not increase more rapidly. Under such conditions the U.K.'s dollar shortage could persist—in the sense that access to the American markets remains very restricted—although sterling itself could become a hard currency in a number of countries. The emphasis, then, must be largely on a shift in imports away from the dollar area, and on the intensification of trade with other countries. Competitive selling is a prerequisite of this policy (as of any other), which should not be regarded as a mere emergency measure. For although investment in the widening of the American market for British goods may bear more fruit in future years, the opening of alternative channels of trade will remain important even in the longer perspective.

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Manchester.
March, 1950.

Consumers' Representation in the Public Sector of Industry

I. Introductory.

In many fields of economic activity in Great Britain, State monopolies have taken the place of competition. The boundaries of nationalisation are, however, still fluid and may be expanded. Labour with its strong trade union organisation had little to fear from nationalisation ; indeed its position has been in many ways strengthened. What is the position of the consumers who have no such organisation ?

The consumer/buyer is often small and weak. The new order has thus given the politician an opportunity to adopt a "protective" attitude. The consumer finds himself wooed by Right and Left alike as the political parties vie with one another to offer him bigger and better safeguards against the powers of the newly created monster corporations.

Under the statutes nationalising coal, gas, electricity, rail and road transport and civil aviation, etc., part of the responsibility for the representation of the consumers rests with Consumers' Councils, Consultative Committees and Advisory Councils. To-day, an army of appointed consumers' representatives all over the country is entrusted with the defence of the consumers' interests. In the coal, gas and electricity industries alone, some 700 persons, exclusive of local committees' membership and secretarial and clerical staffs, are involved. If one adds together the costs of the salaries (some members are paid annual salaries, some fees, some compensation for time lost, expenses, etc.), wages, and other outlay on secretariats, reports, publicity, correspondence and accommodation, etc., the total absorbs a tidy sum from public funds. The machinery of consumers' representation is still expanding. Neither the Labour Government which is creating this machinery, nor the Opposition which goaded the Government to make it yet more elaborate seems to have paused to consider just what this consumers' interest is, or

whether it exists at all in a form which can be presented to a public corporation or to a Minister as a clear objective for policy.

That great hopes have been entertained about the possibilities of the Consumers' Councils can be inferred from numerous pronouncements by those closely associated with the formation of the public corporations. In 1948, at the 52nd Oxford Management Conference, Mr. Herbert Morrison spoke thus : "I want the Consumers' Councils to be powerful and to insist upon their having the facts to judge specific cases. I want them to be critically minded in every good sense of the term and I want their reports to Ministers and the public to be frank. They must be ready to fight when it is necessary for them to fight. These bodies can become important if they are properly run and the consumers' representatives are sufficiently active and vigorous." [1] And earlier at the same conference the Lord President emphasised the point that much is expected from the Consumers' Councils . . . "the Council becomes, not merely a sounding-board for the grievances of consumers, but a place where consumer and producer can discuss their respective difficulties and hammer out an agreed solution . . . We expect the consumers' representatives to be energetic and forceful in pressing the consumers' point of view." [2] The Consumers' Councils and the Consultative Committees were designed in the first place to represent consumers vis-a-vis the Boards in charge of the nationalised industries, but it soon became obvious that their functions were expected to extend well into the field of management. Undeterred by the meagre results shown by such Consumers' Councils as are known already to the economic historians, some writers even believed that these bodies could be a powerful defence against bureaucracy. Mr. Ian Mikardo, M.P., in a widely read pamphlet, "The Problems of Nationalisation," regarded the two Coal Consumers' Councils as "a very strong safeguard—much stronger than in any private

[1] See "Efficiency and Consumers' Choice." Conference Series 1, *British Institute of Management*, March, 1949, p. 20.

[2] *Ibid.*, pp. 12 and 13.

monopoly—against bureaucratic methods, and an additional safeguard is provided by the fact that each of the Consumers' Councils makes an annual report to the Minister which he lays before Parliament." [1]

Although considerable importance is apparently given by the Government to consumers' representation, there has been a surprising lack of speed in getting the appropriate bodies set up. Yet it is perhaps in the early, formative stage of the public boards' existence that vigorous consumers' bodies could be most useful. The Transport Act, 1947, requires that there should be at all times one Transport Users' Consultative Committee covering both goods and passenger traffic over the whole of Scotland, and one Committee covering both goods and passenger traffic over the whole of Wales. (Transport Act, 1947, Section 6 (3) (b)). These were formed only in July, 1949, and as they are not required by the Act to publish their reports we may not learn whether they have met except for their inaugural meetings ; the bulk of rail transport, etc. was vested in the British Transport Commission on 1st January, 1948. Even the Central Transport Consultative Committee for Great Britain was not appointed until December, 1948, nearly one year after the vesting date of the railways, etc. The names of the members of the London Transport Users' Consultative Committee for passenger and goods traffic were announced only at the end of February, 1950. That there has been a good deal of pressure from the impatient transport users can be surmised even from the laconic wording of the Annual Report. Para. 21 of the Annual Report of the Central Transport Consultative Committee for Great Britain for the year ended 31st December, 1949, refers to representations from local Chambers of Commerce "urging" the setting up of area Users' Consultative Committees. No decision has been reached on this important point, and the Government is in no mood to hurry up with the establishment of area Users' Committees. The Iron and Steel Act, 1949, attempts to avoid such tardy progress and requires that the Iron and Steel Consumers' Council shall be appointed not later than six months after the vesting date.

[1] *Current Affairs Pamphlet No.* 60 ; London, 7th August, 1948, p. 12.

The slowness with which these bodies have been set up may be due to the uncertainty still surrounding their main purpose. A careful comparison of the provisions for consumers' representation in the statutes nationalising coal, gas, electricity, transport, civil aviation, iron and steel, etc. does not reveal whether the numerous councils and committees are primarily designed and equipped to put the public's views to the Boards, or to consider and advise on matters passed down from Ministers and the Corporations. The difference is not only one of the ultimate source of initiative, including the selection of problems to be raised, but also one of ultimate status. Consumers' bodies which have an agenda filled for them by the Corporations, in some cases with an obligation to report on the problems within a specified time limit, would be bound to develop differently from those on whose shoulders rest no such duties. The solutions adopted in the statutes are in fact, to a greater or smaller extent, a blend of the two.

> *"We are five brothers at the same time born,*
> *"Two of us have beards ; by two no beards are worn ;*
> *"The fifth lest he should give his brothers pain,*
> *"Hath one side bearded, and the other plain."*
>
> (From a Monastic MS)

The lack of uniformity which surrounds the statutory functions of the consumers' representation in relation to the public corporations has even confused such an experienced observer of the public sector as Mr. Chester. In his pamphlet on the Nationalised Industries [1] he lumps the duties of the Coal Consumers' councils and those of the Transport Consultative Committees into a single category [2] ignoring the fact that while the British Transport Commission has a statutory right to refer matters to its consumers' bodies for consideration the National Coal Board has no such power. The difference is further obscured by an unfortunate confusion of advisory committees with consumers' councils in the main title heading

[1] See : D. N. Chester, *The Nationalised Industries—A Statutory Analysis*, London, 30th July, 1948.

[2] *Ibid.*, p. 21.

of the chapter.[1] If the work were not a statutory but a historical description of what in fact has happened then indeed it would, probably, be right to say that some consumers' bodies which in the statutes were designed to be consumers' defences have tended more and more to exchange confidences with the Corporations, while leaving the consumers to find their own ways of bringing their problems into the open.

The fact that a public corporation can refer matters to a national Consultative Committee is very important and constitutes a distinguishing feature. The corporation could keep the Committee very busy if it chose to refer a great deal to it. (This feature is repeated in the case of the Iron and Steel Consumers' Council, under the Iron and Steel Act, 1949). The Coal Consumers' Councils are under no obligation to consider matters submitted to them by the National Coal Board, although in each of their reports they stress their excellent relations with the Board ; nor do such obligations exist in the case of the Air Transport Advisory Council.

II. The Machinery of Consumers' Representation.

Consumers' representation which has been included in many British nationalised industries shows a great variety of forms. It has followed three distinct patterns (1) national and regional (2) national only (3) regional only with local committees.

(*a*) *National and Regional.*

To consider the sale or supply of coal, coke and manufactured fuel (but not their by-products) for home use or for export there are provisions in the Act [2] for the establishment of one Industrial and one

[1] *Ibid.* Chapter C on p. 17 is entitled : "Advisory or Consumers' Councils" but it covers also Consultative Committees. With the only exception of Iron and Steel (not included in Mr. Chester's review which was published in July, 1948), the statutes consistently use the term consultative in those cases where the corporations have the right to refer problems for consideration.

[2] Coal Industry Nationalisation Act, 1946, Section 4 (3) (*a*).

Domestic Coal Consumers' Council operating at a national level, and permissive provisions for the appointment in any locality of regional industrial coal consumers' councils and domestic coal consumers' councils. The two national bodies were appointed in July, 1947, but the regional consumers' councils have not been called into being.

A "double-decker" form of consumer consultation is gradually being built in transport, to consider matters (including charges) affecting the services and facilities provided by the British Transport Commission. These matters may be raised by users or referred by the Commission or the Minister, and it is the duty of the Consultative Committee to consider such matters. They also consider things which they themselves think important.

Central Transport Consultative Committee for Great Britain has been appointed and met for the first time on 15th February, 1949. It is composed of representatives of agriculture, commerce, industry, shipping, labour, local authorities and the British Transport Commission, and other persons appointed by the Minister. As in all other consumers' councils (except the Air Transport Advisory Council)[1] all its members are *appointed* by the Minister. In addition to the national body there must be set up either area Transport Users' Consultative Committees, covering passenger and goods traffic jointly, or separate area Committees for passenger traffic and for goods traffic (the Act requires that there should be at all times a Committee for Wales and one for Scotland). It has been said in the House of Commons that matters were going to the Central Consultative Committee which should go to area Committees. In reply Mr. Barnes, the Minister of Transport, informed the House that Committees had been set up for Wales and Scotland, and that other Committees would be formed as area road passenger schemes come into operation (*Hansard*, 25th July, 1949). The formation of the transport users' consultative machinery (although this machinery is still far from complete at the area level) is not intended to displace

[1]Under the Civil Aviation Acts, 1946 and 1949, the Chairman of the Air Transport Advisory Council is appointed by the Lord Chancellor.

the functions of the Railway Rates Tribunal. At this formative stage it is too early to say how the two can usefully coexist. It seems certain already that the London Transport Users' Consultative Committee will not be allowed to appear before the Transport Tribunal on the matter of the new London Charges Scheme. The new Transport Tribunal takes over, virtually unchanged, the functions of the Railway Rates Tribunal of 1921, and will take over some of the functions of the (now dissolved) Railway and Canal Commission, and the Appeal Tribunal set up under the Rail Traffic Act, 1933. The Appeal Tribunal has recently shown signs of standing firmly in favour of the customer's right to choose the carrier of his traffic [1] and confirms the impression that when consumers' defences take the shape of a Tribunal they can be quite effective. The provisions in the Acts relating to the jurisdiction of the Transport Tribunal are very complex; in the main it will consider charges schemes and hear objections, consider applications to alter charges schemes, and review charges schemes at the request of the Minister.

A two-layer representation of consumers is envisaged under the Iron and Steel Act, 1949. There are to be mandatory national Iron and Steel Consumers' Council (under an independent chairman), and optional committees appointed by the Council (with the Minister's approval) reporting to it on matters affecting particular classes of consumers, whether defined by reference to locality, types of products, or otherwise. The powers given to the Iron and Steel Consumers' Committees [2] appear however to be more limited than those of the area Transport Users' Consultative Committees. The latter are to be appointed by, and have access to, the Minister of Transport. Otherwise the functions of the Iron and Steel Consumers' Council bear a close similarity to those of the machinery set up under the Transport Act, 1947, but in its relationship to the lower Consumers' Committees, which are subordinate to it, it resembles the hierarchy of Consultative Councils and local

[1] See the Appeal Tribunal decision in the case of *Associated Deliveries, Ltd.*, v. *Donaldson Wright* (*British Transport Commission*); 15th Mar., 1950.

[2] Under Section 6 (8) of the Iron and Steel Act, 1949.

representatives' committees in gas and electricity. As in all nationalised industries with central consumers' bodies (except Civil Aviation), the national Consumers' Council for the Iron and Steel Industry will have among its members representatives of its own corporation who sit, as it were, in their own court. The Council is, however, unique in that it can exclude from any of its meetings the representatives of the Corporation; but the powers of such meetings are severely limited, since no reports on them may be sent to the Minister except with the approval of a meeting at which the Corporation members were entitled to be present.

(*b*) *National.*

In transport, coal, and iron and steel, consumers' representation was originally designed to operate a "double-decker" service, at a national level and below. In civil aviation there is only a national Air Transport Advisory Council, composed of a chairman, who must be a lawyer, and four members. The Council has the duty of considering representations as to charges or facilities provided by the Corporations, and problems referred by the Minister.

Members and employees of the airways corporations are excluded by the statute from membership of the Advisory Council. Members of the Air Transport Advisory Council may be paid. Section 12 (6) of the Civil Aviation Act, 1949, states that: "Any Order made under this section may contain . . . provisions for the payment of remuneration to members of the Council out of moneys provided by Parliament . . . as His Majesty thinks expedient."

(*c*) *Regional with Local Committees.*

Consumer representation *without a national body*, and with only area and sub-area machinery, has been chosen for the gas and electricity industries. In addition to the North of

Scotland District Hydro-Electricity Consultative Council appointed by the Secretary of State for Scotland, there are fourteen Area Electricity Consultative Councils and twelve Area Gas Consultative Councils established by the Minister of Fuel and Power, each with a membership heavily recruited from aldermanic and other local government circles. The Chairman of a Consultative Council becomes an ex-officio member of his Electricity or Gas Area Board. He is also paid an annual salary by the Area Board, like all part-time members, though on a somewhat higher level.[1] This personal interconnection in each Area between the Consultative Council and the Area Board creates strong links between the two bodies. While probably valuable in facilitating the better interchange of information, it contains on the other hand a grave danger in that it may result in a sense of divided loyalty.

The Gas and Electricity Area Consultative Councils are big bodies, each composed of over twenty members. Their turnover of membership has already been very considerable. The attendance need not be very high, since only absence from six *consecutive* meetings may disqualify a member. The functions of the two bodies though similar in many respects, differ in that the Electricity Consultative Councils cannot of their own accord discuss the supply of electricity by the Central Authorities to the Areas ; they must restrict themselves to matters affecting distribution. Because the Area Gas Boards are largely independent, and cover both the manufacturing and distributive processes, the Gas Consultative Councils have a status somewhat senior to that of the Electricity Consultative Councils in that they can deal with a broader range of subjects. But both are consultative to the extent that they are charged with the duty of considering such matters as may be referred to them by their Area Boards. A Gas Consultative Council may make direct representations to the Minister after consultations with the Area Board (Section 9 (6)), but an Electricity Consultative Council can reach the Minister only after it has

[1]See : *Hansard*, 8th December, 1949, Columns 187-87.

approached the Central Electricity Authority (Section 7 (8)). In the case of representations reaching the Minister from a Gas Consultative Council he must refer the matter for enquiry and report to a person appointed after consultations with the Lord Chancellor ; no such provision has been made in the case of electricity. Gas Consultative Councils *must* send annual reports (Section 10 (4)), but Electricity Consultative Councils *may* report if they wish (Section 8 (4)).

Both the Electricity and Gas Consultative Councils are entitled to be informed of the plans of the Area Boards, but not of national schemes. Presumably if they asked, they might receive the reply that even the Area plans are part of a larger national scheme which to them must remain a closed book. Moreover, the handing-out of detailed information, even relating to the Areas in question, is largely at the discretion of the Area Boards. This lack of access to sources of information was in the nineteen thirties one of the main causes of the failure of consumers' representation in other countries, notably U.S.A. The North Thames Gas Consultative Council suggested to their Board that it would be helpful to members in assessing the situation if they could be supplied with data regarding the number of consumers and the amount of gas consumed in the domestic, local government and municipal, industrial and manufacturing, and commercial categories. In answer to this the Board expressed regret that they could not issue the information since statistics were not tabulated in the form requested and their existing staff could not be spared for the job. (See *The Gas Journal*, 8th February, 1950, p. 326).

Under Section 1 (4) (*c*) of the Electricity Act an Electricity Area Board may by agreement with any other Area Board supply electricity to consumers in that Area, but it is very doubtful if the respective Consultative Councils may officially enter into relations with each other on matters concerning inter-Area defence of the consumer. Also, problems arising out of the "co-ordination" by the Central Electricity Authority are presumably excluded from consideration by the Consultative Councils ; moreover they will probably have little say in the

matter of the manufacture of fittings, since this is reserved to the national authorities. Gas fittings can in some cases be manufactured both nationally and at Area level.

The Gas and Electricity Consultative Councils are requested to organise local committees which are to serve as antennae for detecting local requirements in respect of the distribution of gas or electricity, and to receive representations from consumers. The North Thames Gas Consultative Council was one of the first to appoint, early in 1950, four district committees for this purpose. The North-Western Gas Consultative Council has circulated over three hundred letters to local authorities and other interested organisations inviting nominations from which local committees could be appointed.[1] These local committees could be the first step in consumers' representation.

III. The Working of Councils and Committees.

The large number of Councils and Committees make it difficult to obtain a complete picture of their work and progress. The general impression is that, as yet, they have carried out very little constructive work. But it cannot be denied that while some would like to take their duties seriously, the bulk of them feel they are not equipped in a business like manner and prefer to follow rather than to lead.

As might have been expected from the weak constitution of the Councils and Committees, they did not obtain, even at the start, much support from the consumers and users. A note of reproach that insufficient complaints were forthcoming from the consumers has crept into all their reports. The first report of the Central Transport Consultative Committee for Great Britain, formed twelve months after the vesting date, complains " . . . the Committee feel the fact that greater use has not been made of their services may cause some comment and suggest that they are not performing their duty," and again " . . . the travelling public have not yet become accustomed to the idea of Consultative Committees."

[1] *Vide* : *Gas Journal*, 18th January, 1950.

After reading this report, the interested passenger may be tempted to look for the Committee's address, but this would be in vain as it is not mentioned in the report. Instead he can ponder over paragraph 7, which obsequiously reports to the Minister that "it was not desirable for the public to make complaints or suggestions to the Committee which should properly and sensibly be addressed in the first instance to one of the Executives or to the (Transport) Commission." The bewildered reader might wonder how long his case would take to be considered (if it should be regarded as sufficiently interesting), remembering that the Committee met three times during 1949 (twice a year being all that Section 6 (7) of the Statute requires) and that the inaugural meeting was devoted to a ceremonious oration. As a result of the few representations which were made, the Committee recommended that collaboration between those providing the services and those using them was the condition of success of nationalised transport. The only independent action arising out of representations by the users seems to relate to car parking facilities at London dormitory stations.

The above report is typical—most other reports are not very much more informative and many are less, although some Committees try to make themselves somewhat more accessible to the public. The Councils and Committees have as yet little to report to the Minister and the public. The other source of information consists of press releases following the various meetings, and these are even less revealing.

Some Gas Consultative Councils and a few Electricity Consumers' Councils hold quarterly meetings to which the Press and the public are admitted. The other meetings are in committee behind closed doors and those who attend are bound to secrecy. The first report of the London Electricity Consultative Council, which covers about one-third of a page, informs the reader that once a quarter meetings will be held to which the press and the public will be admitted, but that their monthly meetings will be held in secret. The minutes of the meetings, when taken, are presumably also treated as confidential. In the circumstances one may wonder whether

it would not be less embarassing for the members of those Committees if they were "taken into confidence" by the boards less frequently, and were given instead more freedom to report matters to the public. If the assumption to be made is that the administration of the public corporation as it stands, is not to be embarrassed, cost what it may, then the procedure is correct ; but if the real purpose is the interest of the users and consumers, then perhaps less secrecy would pay a richer dividend.

The Reports of the Coal Consumers' Councils make somewhat more interesting reading. In a tone sympathetic to the National Coal Board's difficulties, they reproduce in miniature form the Board's Annual Reports. It is noteworthy that in their first Reports the two national Coal Consumers' Councils expressed themselves almost in the same terms against the formation of local consumers' councils,[1] and the Government has shown no enthusiasm for having them. In their second annual reports, as in the first, the two Councils were once more against local consumers' representation, on the ground that it would militate against the ideal of uniformity.[2] "The problems which should come before us," reports the Industrial Coal Consumers' Council, "are either of a much more general nature (than regional problems) which, we think, could not usefully be dealt with at a regional level, or arise from specific complaints where it is of great importance that uniform principles of treatment should become established. In our opinion, if there was a number of Regional Councils to which consumers might complain on questions of price, distribution, or even of supply, it is unlikely that complaints would be dealt with uniformly." It is not explained why the complaints should be treated uniformly in conditions which are far from uniform. The same unconvincing reasons have been given by the Domestic Coal Consumers' Council. We are thus left, at present, with an "upper deck" representation of

[1]See para. 54 of the *I.C.C.C. Annual Report*, 1947/8, and para. 34 of the *D.C.C.C. Annual Report*, 1947/8.

[2]See para. 60 of the *I.C.C.C. Annual Report*, 1948/9, and para. 44 of the *D.C.C.C. Annual Report*, 1948/9.

consumers in the coal industry, meeting in camera, with no local machinery—centralisation carried to its extreme.

The Domestic Coal Consumers' Council reported in the second year of its existence : "The complaints which we have received to date have not revealed any serious defect to which we should draw your attention. They . . . could have been cleared through the normal machinery." (*Report*, para. 40). After this declaration of satisfaction on behalf of the consumers, it is no wonder that with the same logic they continued : "The individual complaints which we have received, do not indicate that there is any large scope for remedial work in the Regions in redressing wrongs or improving distribution, which could be done more effectually by a Regional Council than by this Central Council representative of all parts of the country. Moreover, Regional Councils might be inclined to view the supply position in the light of local demand without full knowledge of the National position." Seeing that one might expect supplies to differ from one area to another such differentiation would not have appeared so unreasonable.

In the coal industry we have the upper layers of consumers' representation only. Direct, regular contacts between the National Coal Board and the big consumers such as the railways, gas, electricity, iron and steel, etc., have been established largely outside the machinery of the Consumers' Councils, and the Board intends energetically to expand these direct relations with large consumers.[1] In such circumstances it is not surprising that the Industrial Coal Consumers' Council did not receive a single individual complaint from a consumer during its first year of operation, and in the second year was called upon to deal with only three complaints.

The Councils' aloofness was bound to have unfavourable repercussions in the trade press. We read in the *Colliery Guardian* of 28th August, 1948 : "So long as these Councils help to drive dissatisfaction underground they will confirm the fears of those who from the start have regarded them as useless appanages of the Juggernaut," and "Perhaps the real

[1]See para. 285 of the *N.C.B. Annual Report* for 1948.

object is eventually to make both organisations redundant and the consumer still more inarticulate."

The Councils did not seem to be in the mood to investigate pedestrian complaints from consumers and merchants ; their apparent aspirations were to discuss problems of policy ; complaints were canalised elsewhere. The National Coal Board, which has no power to refer matters to the Consumers' Councils, were doing their utmost to "take them into their confidence," and to obtain their support and approval. Judging from the Councils' reports to the Minister,[1] in many matters the Board obtained willing co-operation from both the Councils. They went a long way in accepting the extenuating difficulties postulated by the Board ; but at the same time the Councils lacked initiative, and the guidance which they could give did not go very far beyond an elementary stage.

The short first report of the Air Transport Advisory Council for the 18 months ending 31st December, 1948, contains an interesting departure in that it concludes with a tabular statement by the Minister of Civil Aviation on the action taken by him on all three complaints considered. This is in accordance with the requirements of the Civil Aviation Act, 1949, and would appear to provide a loophole for avoiding making additional statements. Those who complained were Miss A. J. Weir, the Hon. Steven Runciman and Mr. R. H. S. Crossman, M.P., the last complaining of baggage-handling breakdown at Northolt. The report mentions that the other few representations received were on such matters as the provision of foreign currency for the use of passengers, provision of meals, incorrect ticketing, mishandling of passengers baggage, inadequacy of facilities, etc., but adds that the representations "were not considered of sufficient general interest to require a public hearing and were all investigated by interview or correspondence." This desire to consider only matters of high policy and the tendency to be consultative (or even sanctioning) rather than consumer is by no means confined to this case. After the customary passage acknowledging the excellent

[1]The Councils' meetings are held in camera.

relations with the Corporations, the report remarks that "while the number of representations made to the Council about the three Airways Corporations in the period covered by this Report has been comparatively few, we have noticed that questions have been asked in the House of Commons and articles and letters published in the Press embodying complaints about the services of the Corporations," and goes on to say that insufficient use has been made of the Council—a complaint commonly made by the Consumers' Councils.[1]

More recently, at the request of the Minister, the Air Transport Advisory Council has given much of its time to advising the licensing authority on admitting charter operators into some classes of scheduled services not competing with the Airways Corporations. *Ceteris paribus*, this function could be compared with a situation in which the Coal Consumers' Councils were called upon to advise on matters of granting licences to private small mines or to opencast mining. This is a new development which constitutes an extension of the functions of consumers' representatives and it is perhaps a little early to appraise its true significance. If the Council should interpret its ultimate aim as the bolstering up of the existing monopolies, one may be led to the conclusion that such "consumers' representation" would contain an unwelcome element. It seems undesirable that a body ostensibly formed for the protection of the consumer should become a mere appendage of the corporations whose possible restrictive practices it was designed to check or at least bring to light.

IV. A Critical Appraisal.

The machinery of consumers' representation in the nationalised industries will no doubt soon be complete. Already reports of the activities of the new bodies are appearing. These are still early days, yet it is not too soon to attempt an interim appraisal of their purpose and chance of success. Are they so constituted that, assuming the best intentions

[1]See also: *Report of the Central Transport Users' Consultative Committee*, published on 25th March, 1950.

possible and the best counsel available, they will have the necessary unity of purpose, strength, information, authority, speed and resources to act as real consumers' representatives? Will they even be successful in their subsidiary function of advising their Boards and Ministers? Or will they become mere rubber stamps signifying approval of their respective Boards' interpretations of "the public interest?" There is also a possibility that they may develop into glorified advertising agencies of the Boards, for "educating" the consumers to "understand" the service that is given to them.[1] We may thus be landed with a representation which interprets the relation between the consumer and the producer in a sense diametrically opposed to that which was advocated by Adam Smith, and which prevails in a competitive situation. We may have Consumers' Councils which pass the producer's point of view to the consumer, rather than the consumer's to the producer. If we could be sure that the problem of ensuring efficiency in the public sector of industry had been solved by other methods, this might not matter. But the big question of efficiency still remains unsolved. Consumers' Councils which (while having no voice in matters of supply) would explain why consumers could not obtain refrigerators, why the gas industry should charge a rent for meters rather than increase the charge per therm, within what limits the calorific value of gas in a district varied over a period; or why prepayment meters should not be cleared every month, would be taking over functions which could be performed more efficiently, more cheaply and with less frustration by the public relations departments of the Boards. Not long ago a suggestion was made in the Stockport area that gas and electricity meters could be read jointly to save bother to the consumers and expense to the Boards. The suggestion was rejected by the area Gas Board. The reasons given publicly were in general terms without a detailed financial estimate.[2] It is not without significance that one of the leading gas papers remarks with sarcasm; "One wonders,

[1]See: *Coke and Gas*, Feb., 1950, p. 40.

[2]The reasons given by the Board for this rejection are summarised in the *Gas Journal*, 18/1/50.

in passing, what the Consumers' Consultative Councils will find to talk about once the average consumer (if such a person exists) has been educated to understand the working of the gas supply industry ;" [1] including such matters as the clearing of old mains, changing pressure, standardisation of calorific value of gas, and the insufficiency of manufacturing capacity. Other Consultative Councils might be faced with the same dilemma.

The independence of all the recently formed Consumers' Councils is very limited. They are in some cases paid and virtually maintained by the Boards to which they might have to make representations ; their accommodation is usually supplied by the Boards in the Boards' own buildings ; their staffs frequently consist of comparatively junior officers seconded by the Boards, and these officers may regard their Council duties as being of secondary importance, especially if they clash with their other duties. This possibility has not passed unnoticed ; the *Electrical Review* has recently given the warning that "care must be taken that Consultative Councils do not come to be regarded as mere instruments of their Boards. That impression seems to exist in some parts of the country, especially when the Councils have accommodation at the Board's offices and officials of the Boards act as secretaries." [2]

The Councils do not resemble tribunals and have little, if any, right to demand information. Most include members of the Boards to which the Councils are attached, who thus have powerful resources, including data and statistical material, at their command, while the other members of the Councils have no comparable facilities. Meetings are rarely held in public and little idea of the nature of the matters discussed can be obtained from the carefully drafted press releases which follow them. In those Councils, such as the Industrial Coal Consumers' Council, where big industrial consumers are represented, the balance of power is less uneven. But large consumers are fast developing "direct" relations with the Boards, and as nationalisation proceeds more industries become members of a club where the washing of linen *in public* is tabu.

[1] *Coke and Gas*, Feb., 1950.

[2] *The Electrical Review*, 2nd December, 1949, p. 1039.

Thus there might occur a virtual secession of these powerful consumers from the Consumers' Councils, resulting in the latter's degeneration into impotence. On the other hand they may play a more useful role if they represent only those who are too weak to fight their case singly.

Action rests in the last resort with the Minister who is the "parent" of the corporation concerned, and not with an independent Minister. This weakens the Councils further, as does the fact that the choice of who should be represented, and by whom, rests with the Minister (with such limitations as the Statutes may prescribe). It is he who "balances" the membership to represent the "average consumer." Moreover, the directions which the *Ministre de tutélle* concerned may give in some cases to a Board, as a result of representations from a Consumers' Council, can relate only to defects in the Board's *general* arrangements, and cannot go beyond.[1]

Institutions are what institutions do. The Consumers' Councils, etc., have not been in existence long enough for anyone to be sure of the directions in which they will move or be driven, nor has the first enthusiasm abated. Their real test is still to come. But on this we cannot be sure. The various Councils and Committees will, no doubt, find sufficient matters to fill their agenda at the periodic meetings they are required to hold, and this may lead them to suppose that the consumers' interests are being duly looked after. In some Councils small steering committees have been formed to see that the Councils have the right matters to discuss at their meetings. Since the Councils apparently prefer to have such "uninteresting" matters as the complaints of consumers directed into other channels, the steering committee is left to choose such general topics as may in their judgment lend themselves to general discussion. If a representative of the public corporation should be a member of such a steering committee (as seems likely), he might find himself tempted to fill the agenda with matters originating from his corporation, and to fight shy of subjects which are inconvenient. Seeing that membership of the Councils and Committees is largely a sparetime job, and that

[1]See : the Coal Industry Nationalisation Act, 1946, Section 4 (5).

this representative should be by far the best-informed member, his influence may prove to be disproportionately great.

All the Councils and Committees devote enthusiastic paragraphs in their reports to stressing the cordial relations between themselves and the Boards. Willingness to co-operate is an excellent thing, provided that, if necessary, the Councils can exert influence on the Boards, and even on Ministers, with some chance of success. In view of the Councils' present constitution and composition one may have apprehensions on this score. In the light of the chequered history of consumers' representation in other countries, doubts are not subsiding, and one wonders whether the new, cumbersome machinery of the Consumers' Councils is the best way of defending the consumer. Might not efficiency, success and economy of resources be better secured if there were, instead of the present functional structure of consumers' representation, a geographical structure with an independent council in each area, representing local consumers vis-a-vis all the nationalised industries? Such a grouping of councils, strongly reinforced by a really independent and well endowed central research and information office of the highest standard, may be one of the solutions. On this basis common problems could be dealt with together; common outlook on the real meaning of the preferences of the "average consumer" could, perhaps, be studied; and common techniques of approaching the Boards and comparing the results from different Boards could be developed.

Finally one is tempted to ask whether the interests of the consumers, as well as of the suppliers, might not be better served if there were more competition and less politics within each nationalised industry, together with a real decentralisation of powers. Such a solution may not suit the administrative convenience of some Boards, but, while it may be heresy at the moment, it is not unlikely that such questions may one day have to be raised.

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Scottish Industries during the Inter-War Period

I.

The Ministry of Labour estimate of insured persons, age 16-64, in July, 1923 and 1937, shows that the industrial population of Great Britain during this period rose from 10,826,000 to 13,244,000—an increase of 22%. The corresponding figures for Scotland are 1,249,000 and 1,398,000, showing an increase of only 12%. Similarly, in Mid-Scotland —the counties of Lanark, Renfrew, Dumbarton, Midlothian and West Lothian—the insured population increased from 792,000 to 868,000, that is to say, by 10%. Thus Scotland's share in the industrial population of Great Britain fell from 11·5% in 1923 to 10·6% in 1937 ; the share of Mid-Scotland fell from 7·3% to 6·6%.

What are the causes of this relative loss of Scottish industries ? It is often said that Scotland—in the same way as Wales, or the North of England—specialised on declining industries and was deficient in industries which were expanding in the country as a whole. This is believed to apply with particular force to the West of Scotland. In a survey of the area made at the University of Glasgow for the Board of Trade,[1] a comparison between the years 1924 and 1930 leads to the conclusion that this dependence on declining industries was responsible for the Scottish position.

On the other hand, the question how far regional differences in industrial structure were responsible for differences in industrial expansion, was the subject of a general analysis by G. D. A. McDougall, incorporated in "A memorandum on the location of industry" by J. H. Jones.[2] It is shown that in most of the seven selected regions, the industrial structure explains the degree of industrial growth between 1923 and 1937,

[1] An Industrial Survey of the South-West of Scotland, H.M.S.O., 1932.

[2] Report of the Royal Commission on the distribution of the industrial population, Cmd. 6153, pp. 249-280.

but that the case of Mid-Scotland provides an exception : here the industrial distribution is quite similar to that of Britain as a whole, but most industries experienced a slighter expansion or a sharper decline than their counterparts in England and Wales.

The result of this study and that of the "Industrial Survey for the South-West of Scotland" appear to be contradictory. The difference in results can hardly be explained by the difference in areas considered or in industrial grouping but may have something to do with the difference in periods covered ; the analysis in the Barlow report, extending over a period of 14 years, would on this score appear to carry more weight than that in the Industrial Survey which is limited to an interval of 6 years.

Thus, the failure of Scotland—or the West of Scotland—to keep pace with the industrial expansion of Great Britain as a whole during the inter-war period, cannot offhand be entirely ascribed to its industrial structure. It therefore seems worth while to analyse in somewhat greater detail the Ministry of Labour evidence to the Royal Commission on which the analysis in Cmd. 6153 was based, as far as it relates to Scotland. The evidence gives figures for Glasgow and for Edinburgh (including Leith and Portobello) as well as for Mid-Scotland as a whole. This permits an extension of the analysis to three areas of which the third may be termed : "Remainder of Mid-Scotland" or "Mid-Scotland excluding 2 cities."

The Ministry of Labour figures distinguish between 46 industries, or groups of industries, including a large group of "other industries and services." The analysis in the Barlow report is based on comparing the actual increase of insured persons in each region with a hypothetical increase, obtained by assuming that within each of the 46 industries, the national rate of expansion or decline had been operative. In the present study, the same method will be adopted but will be applied to "basic industries" only, not to the 7 "local industries" defined in Cmd. 6153 nor to "Public works contracting." These industries are excluded, as it is suggested

that their national expansion rates do not provide a fair standard of comparison with their regional expansion rates. Regions in which a favourable industrial structure brings about a high average rate of expansion over all basic industries, may also be expected to have a higher rate of expansion in individual local industries than regions with an unfavourable structure. On the other hand, public works contracting can be expected to expand more in depressed than in prosperous areas.

Thus, the comparison between expected and actual numbers of insured persons will be based on 38 basic industries. Alternatively, the "miscellaneous" group together with 8 industries which are unimportant in Mid-Scotland though not in Britain as a whole—Electrical wiring, etc. ; Electrical cables, etc. ; Silk, etc. ; Electrical engineering ; Mining products ; Glass, etc. ; Pottery, etc. ; Wool—may be excluded as well, and an alternative set of figures based on 29 industries has thus been obtained. In either case, some approximations had to be made, since full particulars of all individual industries were not given for the cities of Glasgow and Edinburgh. The results are shown in Table I.

The first part of the table shows that in Edinburgh and in Glasgow, the total insured population increased substantially during the period 1923-37, though less than in Britain as a whole. But in Mid-Scotland excluding the cities, the insured population did not even maintain its 1923 level.

Within the field of the 38 basic industries, it is seen that a higher average expansion rate than for Britain as a whole could be expected to apply to Edinburgh, on account of a favourable industrial structure, and to a lesser extent to Glasgow. An unfavourable industrial distribution in the remainder of Mid-Scotland, however, could be expected to lead to a decrease in insured persons there and thus to a comparatively small increase in Mid-Scotland as a whole. In actual fact, an expansion is found in Edinburgh only but a decline in Glasgow and in total Mid-Scotland. Thus, the expansion in Glasgow and total Mid-Scotland over the whole industrial field is entirely accounted for by the local industries

TABLE I

EXPECTED AND ACTUAL CHANGE IN INSURED PERSONS IN MID-SCOTLAND, AND PARTS OF MID-SCOTLAND, 1923–1937

	Great Britain	Mid-Scotland	Glasgow	Edinburgh	Remainder of Mid-Scotland
All 46 industries :					
Total number 1923 ...	10,826,020	792,240	372,260	116,740	303,240
Actual change 1923–37 :					
Number	+2,417,980	+75,330	+52,750	+22,890	—310
% of 1923	+22·5	+9·5	+14·2	+19·6	—·1
38 basic industries :					
Total number 1923 ...	8,163,440	585,200	256,900	72,280	256,020
Expected change 1923-37:					
Number	+804,270	+21,760	+26,660	+14,580	—19,480
% of 1923	+9·9	+3·7	+10·4	+20·2	—7·6
Actual change 1923–37 :					
Number	+804,270	—22,890	—320	+5,880	—28,450
% of 1923	+9·9	—3·9	—·1	+8·1	—11·1
Excess or deficiency 1937 :					
Number	—	—44,650	—26,980	—8,700	—8,970
% of expected total...	—	—7·4	—9·5	—10·0	—3·8
29 main basic industries :					
Total number 1923 ...	5,668,230	451,890	172,160	41,820	237,910
Expected change 1923-37:					
Number	+220,740	—8,190	+7,620	+7,740	—23,550
% of 1923	+3·9	—1·8	+4·4	+18·5	—9·9
Actual change 1923–37 :					
Number	+220,740	—48,860	—8,950	+2,820	—42,730
% of 1923	+3·9	—10·8	—5·2	+6·7	—18·0
Excess or deficiency 1937 :					
Number	—	—40,670	—16,570	—4,920	—19,180
% of expected total...	—	—9·2	—9·2	—9·9	—8·9

and contracting. urther more, it is seen that within the 38 industries, each part of Mid-Scotland shows in 1937 a deficiency of insured persons as compared with the expected number. The deficiency is more marked inside than outside the cities.

The alternative figures based on 29 main basic industries lead to a broadly similar result. On this basis, however, the deficiency in insured persons is almost as marked in Mid-Scotland outside the cities as in Edinburgh and in Glasgow—about 9-10% in each case.

In terms of actual numbers, the deficiency in Mid-Scotland in 1937 amounts to about 45,000 insured persons in all basic industries, or about 41,000 in the main basic industries. It may be of interest to consider the excess or deficiency in individual industries. This is done in table II for 16 industries, for which exact particulars are available for Glasgow and Edinburgh. The industries are arranged in order of expansion in Britain as a whole, beginning with the largest rate of expansion and ending with the largest rate of decline.

TABLE II

EXCESS OR DEFICIENCY OF INSURED PERSONS IN EACH OF 16 INDUSTRIES, 1937

Industry	Mid-Scotland	Glasgow	Edinburgh	Remainder of Mid-Scotland
Expanding :				
Vehicles	—780	+120	+390	—1,290
Hotel, etc.	+750	—1,600	+1,150	+1,200
Furniture, upholstery...	—2,190	—1,780	—430	+20
Metal goods	—1,430	—530	—940	+40
Miscellaneous food ...	—2,000	—670	+320	—1,650
Hosiery	—960	+790	—170	—1,580
Printing, etc.	—1,310	+1,310	—2,260	—360
Drink	+270	+350	+640	—720
Tailoring	—970	+470	—610	—830
Rubber	—330	—680	—660	+1,010
Cocoa, chocolate ...	—2,140	—2,260	+340	—220
Chemicals	—3,290	—450	—90	—2,750
Declining :				
General engineering ...	—9,420	—6,700	—2,210	—510
Dock, harbour, etc. ...	+460	—170	+410	+220
Coal mining	—3,320	—2,420	—210	—690
Shipbuilding	—1,800	—290	—530	—980
All 16 industries ...	—28,460	—14,510	—4,860	—9,090

In interpreting these figures, it must be borne in mind that Scottish industries like "General engineering" may not be strictly comparable with their counterparts elsewhere in Great Britain. Nevertheless, some interesting results seem to follow from the table.

The most striking feature is the fact that in Mid-Scotland as a whole, only a few industries fared better than expected, and these to a very small extent only. In each part of Mid-Scotland, there were some industries which gained ground, like "Hosiery," "Printing, etc." and "Rubber"; but they appear to have done so mainly at the expense of another part of Mid-Scotland, not at the expense of an outside area, and the net result has been a shift away from this region for nearly every industry. In other industries—like "Furniture," Miscellaneous food," "Cocoa, chocolate," "Chemicals" and "Coal mining"—big losses in one area, not compensated by gains in other areas, took place. Large deficiencies in Mid-Scotland as a whole are present in rapidly expanding and moderately expanding as well as declining industries.

Summarising, it has thus been shown that in 1923, the industrial structure of Edinburgh, and to some extent that of Glasgow, were favourable for expansion, although this was outweighed by an unfavourable structure of the remaining part of Mid-Scotland. But the expansion for which there was an apparent opportunity did not take place in the cities to the extent which might have been anticipated. Nor does the countryside of Mid-Scotland appear to have appreciably benefited from an overflow of industry across the town borders. The expanding industries, indeed, appear to have expanded more outside than inside Mid-Scotland.

For purposes of comparison, it may be worth while considering the case of London and the South-East of England. Between 1923 and 1937, the insured population increased not only by 39%—from 2,054,000 to 2,855,000—in London, but also by 54%—from 628,000 to 969,000—in the adjoining South-Eastern region; and there were also increases in the South-Western and Midland regions. The favourable industrial

structure of this part of the country was not confined to London but must have been fairly universal in the countryside.

Here, then, is a possible explanation for at least part of the failure of Scottish industries to keep pace with their English counterparts. It seems that, on the whole, the expanding industries were too far concentrated in small areas to allow sufficient expansion. A high degree of mobility of labour within Scotland might have been necessary if Scottish industries were to have held their own. But partly in view of the difficult housing conditions in Scotland—the 1931 Census records 1·27 persons per room for all occupied houses, compared with ·83 persons per room in England and Wales—and partly in view of other factors, it may well have been more difficult for workers to move within Scotland than to migrate to England.

II.

As a check on the results obtained on the basis of Ministry of Labour figures, a similar analysis, based on the number of persons employed at the Production Censuses of 1924, 1930 and 1935, has been made. In this analysis, the whole of Scotland has been covered, but two Scottish areas have been distinguished : the West of Scotland, consisting of the counties of Lanark, Renfrew, Bute, Argyll and the main part of Dumbarton ; and the "Remainder of Scotland," or "Scotland excluding the West." Results will be given for the two areas separately.

For the industrial field covered by the Census as a whole, and for all factory-trades only, the following figures, shown in Table III, are obtained.

For Britain as a whole, employment in the Census trades showed little change between 1924-35, though there has been a gain in the factory trades and, obviously, a loss in the non-factory trades, mainly coal mining. Of course, some of the industries in which the main expansion took place lie outside the scope of the Census. In both Scottish regions, employment fell absolutely and relatively to Britain as a whole during

TABLE III

CHANGES IN EMPLOYMENT IN GREAT BRITAIN AND SCOTTISH REGIONS BETWEEN 1924, 1930 AND 1935

	Great Britain	West of Scotland	Remainder of Scotland
All Census trades :			
1924–30 (% of 1924)	—2·0	—9·2	—6·7
1930–35 (% of 1930)	+2·4	—1·9	—10·9
1924–35 (% of 1924)	+ ·3	—11·0	—16·8
All factory trades :			
1924–30 (% of 1924)	+ ·6	—5·3	—2·2
1930–35 (% of 1930)	+6·0	—4·7	—11·5
1924–35 (% of 1924)	+6·7	—9·7	—13·4

each of the periods 1924-30 and 1930-35. The heavy fall in employment in "Scotland excluding the West" between 1930 and 1935 is particularly remarkable.

In the following analysis, the non-factory trades have been excluded. This means approximately the same as the elimination of "local industries" in the preceding section, except that coal mining will also be excluded here. Further more, owing to non-disclosure in the Census of separate regional figures for some industries, it is necessary to restrict the analysis to the most important factory trades in each region. Thus, 27 trades have been selected for the West, and 26 trades for the remainder of Scotland, covering 83% and 82% respectively of total factory employment in the region in 1924. Of these, 21 trades are included in both Scottish regions.

On the basis of the national expansion rates, the expected increase or decrease in employment in each Scottish region over the field of the selected trades can be worked out and compared with the actual increase or decrease. The results are shown in Table IV.

TABLE IV

EXPECTED AND ACTUAL CHANGE IN EMPLOYMENT IN TWO SCOTTISH REGIONS, 1924–30 AND 1924–35

	West of Scotland (27 trades)		Remainder of Scotland (26 trades)	
	1924–30	1924–35	1924–30	1924–35
Total number 1924	236,072	236,072	200,116	200,116
Expected change :				
Number	+ 409	—2,380	—4,260	+ 769
% of 1924	+·2	—1·1	—2·1	+·4
Actual change :				
Number	—9,397	—25,563	—4,534	—25,238
% of 1924	—4·0	—10·8	—2·3	—12·6
Excess or deficiency 1930 or 1935 :				
Number	—9,806	—23,183	—274	—26,007
% of expected total ...	—4·2	—9·9	—·1	—13·0

It is seen that within the field of industries covered here, employment could have been expected to remain at approximately the same level in both Scottish regions : this implies a somewhat unfavourable industrial structure compared with Britain as a whole, where employment expanded by about 7% between 1924 and 1935 in all factory trades. Actually, employment in Scotland fell off considerably. Thus, both regions, particularly Scotland excluding the West, lost ground to a large extent within industries, in favour of other regions. In Scotland outside the West, this process appears to have taken place entirely during the period 1930-35 ; in the West of Scotland, the process seems to have begun before 1930 but accelerated later on.

Table V shows how the deficiency in employment is distributed over the individual trades, which have been arranged in order of relative expansion between 1924 and 1935 in Great Britain.

TABLE V

EXCESS OR DEFICIENCY OF EMPLOYED PERSONS IN SELECTED CENSUS TRADES, 1935

Trade	West of Scotland	Remainder of Scotland
Expanding :		
Electrical engineering	—1,322	—729
Manufactured stationery	·	—240
Furniture and upholstery	—2,115	—2,281
Bread and biscuit	—1,150	—1,376
Building materials	·	—768
Hardware, etc.	+ 90	·
Motor and cycle	—169	+473
Timber	+247	—1,720
Printing of newspapers, etc. ...	+416	—308
Wholesale bottling	+ 7	—716
Preserved foods	—263	·
Bricks and fireclay	—285	—483
Iron and steel foundries	—2,846	—3,760
Scientific instruments	+153	·
Tailoring, etc.	—3,028	—3,762
Hosiery	—769	—2,436
Rubber	—140	—1,665
Paper and board	+540	—1,326
Chemicals, etc.	—1,112	+396
China and earthenware	—715	·
Linoleum and oilcloth	·	—66
Declining :		
Printing, bookbinding, etc. ...	+352	—2,186
Mechanical engineering	—7,710	—2,607
Cocoa and sugar confectionery ...	—499	—55
Boot and shoe	—437	—842
Woollen and worsted	+1,629	—787
Textile finishing	—1,646	—143
Iron and steel (smelting, etc.) ...	—1,833	·
Fish curing	·	—412
Cotton	+2,310	·
Jute, Linen and Hemp	·	+2,539
Shipbuilding	—2,888	—747
All selected trades ...	—23,183	—26,007

For the West of Scotland, part of the total deficiency in 1935 is seen to be concentrated in "Mechanical engineering." This may be due to specialisation on declining sections of the industry and may not be of great importance. But the region also lost considerable ground in rapidly expanding

industries like "Electrical engineering" and "Furniture and upholstery," and in moderately expanding industries like "Iron and steel foundries," "Tailoring, etc." and "Chemicals, etc." In none of the expanding industries is there any substantial excess expansion over the national rate. In the main declining industries, excess and deficiency are more evenly balanced than in the expanding industries. Thus, the trouble seems to be associated with a failure to expand rather more than with an excessive decline.

For the remaining part of Scotland, the picture obtained is even more striking. Over the period 1924-35, there were hardly any industries at all in which the region gained relatively to Britain as a whole, and the process of losing ground was very widespread.

Of course, the importance of the results for individual industries should not be exaggerated. Some of the trades treated as one unit are, in fact, composed of different sections, in some cases with widely different national expansion rates. It is possible that in some instances, Scotland specialised on the declining section of the industry.

However, it is doubtful how far this can pass as an excuse. It is often alleged that Scottish industry has been backward in its methods compared with England. It can be shown that, if this be true, it does not show up very much in a lower value of output per head. But such backwardness may well be reflected in specialisation on the wrong type of product—in a failure to adapt production to market conditions.

In any case, the comparative uniformity in the results obtained, particularly for Scotland outside the West, cannot be entirely explained in this way. To some extent, "contagion" must have operated. In areas like the Borders or Dundee, the decline of one or a few industries may have spread over the whole industrial field when other industries, depending on local markets, have followed suit. The case of shipbuilding, and the subsidiary industries for which it provides a market in the West of Scotland, is often quoted as an example.

Thus, an excessive degree of interdependence between Scottish industries and an insufficient extent of catering for

English markets may well have been responsible for some of Scotland's economic difficulties in the inter-war period. If greater economic independence for Scotland is desired, this factor and its implications should be taken into account.

Summarising, we can say that the results obtained in the previous section have been broadly confirmed. Undoubtedly, Scotland specialised on declining industries during the inter-war period ; possibly also on declining sections of industries. But in addition, there has been a shift of industry away from Scotland which cannot be explained on account of its industrial structure. An industrial expansion in some Scottish areas such as to offset the decline in others, may have been prevented by insufficient mobility of labour within Scotland ; and Scottish industries may have been too much bound up with each other's fate.

There are indications that changes in industrial structure will take place at a more moderate pace in the near future than during the inter-war period ; a decline in employment in some industries may be inevitable, but no catastrophic fall may be expected. Thus, even a possible decline of some Scottish industries need not have a very serious effect. With an increase in competition, it may be of greater importance to Scotland to see that its industries should not lose ground and should secure a fair share in industrial expansion. Some degree of geographical or occupational mobility of labour and versatility of firms regarding their products may be of primary importance for Scotland's industrial future.

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The Demand for Potatoes

If during the last twenty or thirty years the tastes of consumers with regard to potatoes have not changed to any very great extent, consumption can be regarded as associated with price and income only. Any shift there might have been, say, due to propaganda concerning nutritional benefits of substituting milk and green vegetables for potatoes and bread, will have been closely correlated with income and can be incorporated in that variable.

Consumption is taken to be production plus retained imports minus exports; price equals average retail price; income is net national income at factor cost. Both price and income variables are deflated by the cost of living index in order to eliminate movements in the general price level.

The time basis of collection of the data is the year, 1st July to 30th June and attention is confined to pre-war data to avoid the disturbing effects of rationing, shortages, price controls, etc.

Index Numbers (Average 1937-39 = 100)

Year	Consumption	Deflated Price	Deflated Income
1924–5	98·4	130·3	74·6
1925–6	113·2	97·0	75·2
1926–7	99·2	99·4	78·7
1927–8	106·7	111·0	82·4
1928–9	116·4	95·7	83·5
1929–30	121·7	77·7	83·8
1930–1	97·9	99·8	82·9
1931–2	98·0	141·9	82·5
1932–3	116·2	95·9	85·3
1933–4	112·2	85·2	89·5
1934–5	110·1	99·7	93·0
1935–6	98·4	116·3	96·9
1936–7	95·5	108·5	98·9
1937–8	100·3	98·3	99·1
1938–9	104·1	93·3	101·9

In analysing demand for a commodity the aim is almost always the determination of a relationship which can be used for prediction; the estimation of consumption likely at a given price, for example, or the prediction of the price corresponding to a given level of consumption.

In the case of a perishable agricultural commodity such as potatoes in almost completely inelastic short-run supply, the most useful approach is to predict the price, at a certain income level, which would result in a given supply being absorbed. Applying multiple regression analysis to the logarithms of the data (a function linear in the logarithms provides a slightly better fit than one linear in the original variables, the elasticities being very similar in the two cases) the proper equation would be

$$\text{Price} \propto (\text{Consumption})^{-1\cdot46} \ (\text{Income})^{-0\cdot50}$$

implying that if consumption increases by one per cent., income remaining unchanged, price would have to fall by 1·46 per cent., whereas an income rise of one per cent., for constant consumption, is associated with a drop in price of 0·50 per cent. Thus at a higher level of income, a lower price is necessary to take a given quantity off the market. Potatoes thus appear to be one of the rather elusive inferior goods beloved of economic theorists. When consumers have more money to spend they shift from potatoes to more expensive commodities.

K. S. Lomax

Manchester.

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2.

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4.

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The Crossley Strike

1

In the winter of 1949-50 there were, in the engineering and allied trades, a number of strikes which concerned the powers of employers to dismiss workers. Several of these disputes involved particularly the position of trade union representatives in the workshop. In September, 1949, 1,000 workers struck for four days after the discharge of a shop steward by Duple's Motor Bodies of Hendon. In November a strike of 130 workers against the dismissal of the convenor of shop stewards at the Bryce factory on the Great West Road was reported. In January, 1950, some 2,000 workers struck against the dismissal of two men by the Sterling Metal Co., of Coventry : in Birmingham about 1,000 men were involved in a dispute with the Moss Gear Co., on the firm's alleged refusal to recognise a shop steward. In February, there was a stay-in strike at the Ford Dagenham works over the dismissal of a shop steward : engineers at the Dalzell Steel Works struck on a redundancy issue and were joined by their fellows at the Mossend and Cambuslang works of Colville's Ltd.; and a strike of electricians—remarkable in that it was given official support by their union—on contract work at a Port Talbot steel firm occurred over the transfer of their shop steward on redundancy. The most stubborn of these was a strike of over 1,000 engineering workers at the Crossley Motor Company's vehicle works, Stockport, concerning the dismissal of certain workers including the convenor of shop stewards. This strike lasted nearly six weeks, threatened at one point to involve the engineering trades in the Manchester area generally, and produced a considerable crop of inter-union involvements.

Some background is necessary to the understanding of these disputes.

2

Certain minor sections which have separate negotiating machinery apart, procedure for the settlement of disputes in the engineering trades generally is regulated by a "Memorandum

of Agreement" concluded in 1922, signed separately at that time and since by various trade union federations and individual unions in the industry, and at present operative as between the Engineering and Allied Employers' National Federation on the one hand and, broadly, the unions affiliated to the Confederation of Shipbuilding and Engineering Unions on the other.

On the employers' side, the Engineering and Allied Employers' National Federation is a powerful and well-organised representation of engineering managements. Formed in 1896, as the heir to successive *ad hoc* employer combinations, and on the initiative of the Clyde federation (which stated its object as "to protect and defend the interests of employers against combinations of workpeople"), it first united firms in the heavy engineering centres of the North-East Coast, Scotland, Belfast and the North-West. London firms joined shortly after its foundation, and just before the First World War it was strengthened by amalgamation with the National Employers' Federation which had its main strength in the Midlands engineering centres. Since that time, and apart from a "breakaway" by the Teeside employers after the 1922 Agreement, engineering employers have pursued a single-minded course in negotiations with their workpeople : at the time of the great 1922 dispute the Federation was estimated to represent some £500,000,000 of invested capital. No such recent estimate is available : although many small establishments remain "non-federated" and a few large concerns still prefer to go their own way, the Federation is, however, acknowledged as broadly representative of the interest of engineering employers. Federation policy is determined in accordance with a system of representation based on the wage-bills of associated concerns. Member firms contribute to an "Indemnity Fund" from which assistance may be given to individual concerns in dispute with their workers. It maintains a full-time Director and able head office staff of experts : its local associations are themselves, especially in Scotland and the North, strong and influential and have also full-time Directors and staffs to advise and service members. The Federation is thus both an efficient

vehicle for the formulation of policy, and, through the advice and assistance proferred by its local offices to its members, an efficient instrument of co-ordination.

No such effective unification of organisation has yet emerged on the union side of the engineering trades, which therefore requires more detailed examination.

3

The Confederation of Shipbuilding and Engineering Unions has at present some 37 organisations affiliated to it in respect of their engineering membership. These include a number of medium-sized and small unions organising special classes of skilled craftsmen such as those of the boilermakers and pattern-makers : the two great organisations of general workers, the Transport & General Workers' Union and the General & Municipal Workers' Union : and the Amalgamated Engineering Union, with some three-quarters of a million members. There is no single union for any particular class of engineering worker. No union affiliated is without some membership in other industries than the engineering group. Some of the Confederation unions, such as those of the electricians and the woodworkers, have the preponderant part of their members in other industries : the engineering membership of the general workers' unions is a comparatively small part of their vast and manifold interest. All unions are represented in the Confederation's General Council and elect 30 members to its Executive, voting according to their strength. The Executive again appoints union chairmen for shipbuilding and engineering negotiations respectively. The Confederation is also separately represented in a number of negotiating bodies for other industries where engineering tradesmen are employed. Its interests are, therefore, widely dispersed.

Centralisation of union negotiating strength has been limited also by the employers' attitude towards "staff unionism." It has been their view that supervisory and administrative workers, as agents of the employers, could not be identified with operatives. Employers have been particularly reluctant to accept unionisation of foremen. Many

foremen, for instance, are promoted craft unionists : it was a condition of membership of the Foremen's Benefit Society——promoted in the first place by the North-East Coast employers and still existent—that candidates for membership should not belong to a trade union. One union organising foremen still has to prove 50% membership before it can claim negotiating recognition in any firm—a very exceptional requirement. Unions of higher employees now affiliated to the Confederation include those of clerks, draughtsmen, technical and supervisory, and scientific workers ; they have, however, separate agreements with the employers' Federation. The Federation has repeatedly refused to accept representation of such unions on Joint Production Committees.

The growth of the Confederation has been marked and hindered by inter-union disagreement both on the demarcation of spheres of competence and on principles of organisation. Its first form was a federation of craft unions, initiated in 1890 by the highly-organised boilermakers' society (shortly after, though not because, the North-East Coast employers had themselves insisted on meeting their workers' representatives in "deputations" to avoid the inconvenience of separate negotiations with many individual societies). It was reconstituted with the general workers' unions—previously separately grouped—only in 1936, and the foundry workers' amalgamation joined in 1944. The A.E.U. participated in various looser groupings, such as the Engineering Joint Trades Movement, but was divided from the craft unions by questions of principle. These centred on the claim of the old Amalgamated Society of Engineers (the A.E.U.'s predecessor) to organise—in the words of an early leader—"every workman engaged in connection with the engineering trades who is called upon to exhibit mechanical skill in connection with his labour." This objective, and successive amalgamations of the A.E.U. with smaller unions, were felt to jeopardise both the independence of the major craft unions and the separate status of their craftsmen members—a condition which led the Webbs to comment that "so long as the A.S.E. claims to include within its own ranks every kind of engineering mechanic, and to

decide by itself the policy to be pursued, a permanent and effective federal organisation is impossible." The immediate limit of major amalgamation of unions in the A.E.U. has probably been reached ; the A.E.U. itself finally joined the Confederation after the Second World War : the historical background of relations between the A.E.U. and the craft unions—themselves differing in character and structure—remains a present reality in the workshop, however.

The organisation of the A.E.U. itself does not make for decisive formulation and execution of policy : throughout its history its members have clung to institutions which might protect them against the powers of centralized authority. When the union was finally impelled in 1892 to accept the necessity for some permanent central policy-making and executive body it was so impressed by two proposals probably put forward as alternatives—one for a full-time elected executive committee, the other for an elected full-time staff of officials to serve under the representative committee—that it adopted both. The system by which the membership separately elect both full-time officials and full-time representatives is claimed to ensure popular control ; it does not, however, clearly define the responsibility of the officers to the committee. This dualism is repeated down the A.E.U. structure, moreover. Its area committees have elected secretaries, who, down to certain levels, are full-time. Alongside these are also elected organisers. At this level, whatever the formal position, authority and responsibility appears on occasions doubly confused. Thus it appeared—at least to an outsider—that at one stage in the Crossley dispute, the District Secretary and Divisional Organiser concerned, both elected, were pulling—from neighbouring rooms in the A.E.U.'s Manchester office—in opposite directions.

The relationships of the engineering unions were not simplified by the war-time growth of the engineering membership of the general workers' unions. Originally representing only the labourers, a relatively uninfluential element of engineering labour, they developed with war-time expansion and "dilution" both their voting strength in the Confederation's

councils and the range of their interest, organising many of the multiplying class of semi-skilled workers. During the war, too, however, the A.E.U. opened special classes of membership for women and semi-skilled workers, though the interest of its older skilled membership led it to limit the internal rights of these groups. Thus in extending their organisation upwards, the general workers' unions met the A.E.U. coming down. Working arrangements were in fact arrived at: but some suspicion of the general workers' unions, with their highly centralised control, and their engineering policy heavily influenced by the very general character of their external interests, is still common among engineers. The general workers' membership on the other hand often appears to share the craft unions' fear of "A.E.U. domination."

Each engineering union has itself what might almost be described as a specific "personality," formed by its individual history, structure and situation. When opinions differ at national and works levels, the interplay between them may produce a different result in each union. In some major unions full-time officials, closely in touch with the T.U.C., government and national employers' bodies, have a dominant influence. In certain of the smaller craft unions, however, elected executives of working tradesmen tend to reflect equally closely the view-point of their active rank-and-file, which is as likely to be radical as conservative—one of the factors making "movements from below" an important force in the engineering trades.

For a variety of reasons, therefore, the Confederation of Shipbuilding and Engineering Unions is a relatively weak instrument for the development and co-ordination of policy. In the period of post-war reconstruction, for instance, it was neither as persistent nor as successful in formulating and pressing a viewpoint on the economic organisation of the engineering trades as were union groups in other industries—admittedly more simple in structure. More recently, again, its pre-occupation with wage policy failed to yield a programme commanding the general support of its unions, and an attempt to secure this by direct voting procedure, pressed by the A.E.U.

with some apparent reluctance on the part of that union's own executive, produced no greater appearance of unity at an executive level. No more is it notable for firmness of executive action. It has only a small H.Q. staff and its District Committees, representing its affiliated unions locally, are serviced by an official of a member union acting as secretary : it has thus no full-time local agents owing allegiance to the general interest of engineering workpeople alone. Thus at the time of the Crossley dispute the Secretary of the responsible District Committee of Confederation was also the full-time District Secretary of the A.E.U. There is a formal obligation on each affiliated union to consult the Confederation centrally in case of strikes involving (as nearly all do) other member organisations ; but its unions have not been obviously anxious to submit to common rules which would restrict, delay or compel their own action. In the Crossley case, at least, the rule was only dubiously observed.

4

The above picture is not to present internecine strife as characteristic of engineering labour : but rather to illustrate the extent to which the desires of union members and leaders for "closer unity" have been frustrated by the structures and sectional interests of their own organisations. Impatience with the inadequacies of official organisation has, indeed, fostered the formation of unofficial associations overriding the boundaries of the separate societies. Some co-ordination of workshop negotiation was essential. The unions of skilled men always appointed "card" or "ticket" stewards—in the first place to provide local information to their executives and to check the union membership of workers : these naturally came to act as general representatives of their unions on the job : "relaxation" and "dilution" in the First World War gave a special importance to union workshop agents : over a period recognition of the shop steward system was accorded by the employers, and finally by those unions which were more reluctant to accord negotiating authority to agents not directly accountable to official executives. With the further extension of workshop union organisation in the

Second World War the A.E.U., particularly, made provision for shop stewards to have some representative voice in its local structure, while other unions and the Confederation itself have developed methods—such as quarterly meetings—of consulting and informing shop stewards. The Confederation has now a formal system of workshop union collaboration. The shop stewards of the various unions at each establishment nominate one of their number to be appointed by the local District Committee of the Confederation as "Confederation Shop Steward" for his particular factory.

Nevertheless, the place of the shop steward system in internal union structure still remains indeterminate. Although the stewards are appointed usually by the union members "on the job" and remain in direct day-to-day contact with them, the formal fountain-head of popular authority is the local union branch, organised in most unions on a geographical basis. The engineering industry's system of workshop negotiations gives the shop stewards a special position, however.

A very high proportion of engineering workers are paid by the piece. In theory the earnings of piece-workers are to be related to the nationally-agreed minimum rates for time-workers. But practice diverges widely from the theoretical. At factory level, the actual wages of time-workers are often fixed to accord with actual piece-rate earnings. The latter are themselves determined according to a great variety of systems : straight piece-work, regressive and progressive bonus systems, collective bonuses, high "lieu" rates, etc. exist together—sometimes in a single establishment. The nature of much engineering work requires that the rate for each job be separately calculated. Such negotiations are usually conducted through the shop stewards, and in them workers are accustomed to conform to the principles determining reasonable earnings—and often also, reasonable output—which are agreed between the stewards of the different unions concerned. Collective bargaining in the factory requires of workers a repeated disciplined response to the stewards' lead : refusal to handle, and stoppage of work on, jobs which do not "pay the rate" are

common. From an internal stoppage, it is not a long step outside the gates and the customary system of workshop negotiation gives a special power to the workshop leaders of the operatives.

Thus "direct action" by workers always presents an alternative to the delays of official procedure and the complications of inter-union relations. The revolutionary Shop Stewards' Movement of the First World War survived as the Shop Stewards' National Council : it played a part in the radical "Minorities" and "rank and file" movements of the inter-war years. The National Joint Shop Stewards Council of Engineering and Allied Trades' remains as a kind of immament alternative leadership of engineering workers.

The engineering agreements gives no special security of employment to stewards, and the very duties—and risks—of the shop steward's position have encouraged the selection of "militants" for it. This level of union organisation has both been the source of many radical movements and been considered a strategic field for political groups—and, more recently, groups with religious associations—anxious to command the support of workers ; which accounts in part for the reserved attitude of many official union leaderships to it.

These factors played some considerable part in the development of the Crossley dispute, while in this—as in those other recent disputes set out above—special force was also given to the feeling of strikers by the nature of its occasions. These disputes involved the discharge of operatives or the alleged "victimisation" of shop stewards. These issues—which are inter-related, since workers will often suspect that a redundancy is being used by their management to dispose of a steward who has been too forward in his advocacy of their interests—arouse reactions which carry a special charge of emotion ; fear of an attempt to undermine workshop bargaining organisation and fear of unemployment.

5

The 1922 Memorandum of Agreement between employers and unions contains certain "Provisions for Avoiding Disputes." These are derived from an agreement of 1914—the famous

"York Memorandum"—and provide for various stages of reference of disputed questions from the works to local and national joint meetings. The 1922 Memorandum is especially remarkable, however, in that it incorporates an intended working definition of the powers of managements and unions respectively in relation to disputed matters : this constitutional enactment of "managerial functions" has major significance.

Any picture of the relations between employers and workpeople in the engineering trades must take into account not merely direct negotiation on wages but also the characteristic mode of operation of the skilled workers' unions : to maintain the position of their members, these have depended historically on control of entry into their occupations, on exclusion of non-members from the types of work their members were competent to perform, and on control of the work actually done by their members and its conditions. Such things as demarcation rules, restrictions on piece- and overtime-working, insistence on the manning of machines by certain grades or numbers of workers, and other methods of sharing and allocating work, have effectively limited the freedom of managements to engage, transfer and order workers as they thought fit, and though considerably modified, are still a necessary subject of negotiation in craft trades. Every major dispute in engineering, from the lock-out in 1852 which followed the formation of the A.S.E., has involved the question of "managerial functions" and has centred on an attempt by unions to extend the area of joint control or by employers to resist such an encroachment on or to expand their discretion.

The current Agreement was shaped directly by the outcome of just such a conflict. In 1922 there was a dispute between the employers and the A.E.U. on the interpretation of a 1920 agreement that overtime should only be worked "when necessary." A.E.U. members were locked-out following a refusal to recognise the right of managements to change workshop practice without previous consultation with the workers : a request for a similar recognition was sent by the employers to all the other unions in the industry ; they refused to sign a declaration to this effect and the national engineering

lock-out of that year followed. In the upshot the unions, already weakened by unemployment and declining wages, accepted the limitations on their right to "previous consultation" which are embodied in the present Agreement. This provides that any change in general wages, the general working week, or *agreed* working conditions which is proposed by either side in a firm and is resisted by the other must be subject to the whole range of the "York" procedure before it can be confirmed. All other questions, however, come under the heading of "Managerial functions" : a change here is an "act of management" ; if disputed it stands and work must proceed on that basis unless and until the disputed alteration is overthrown at a higher level in "procedure." The one exception to this rule concerns a change involving the substitution of one grade of labour by another, of which 10 days' notice must be given to the workpeople, but on which the management is thereafter entitled to make a temporary decision pending a reference to "procedure"—a limited recognition of the peculiar importance of craft rules in the industry.

The broad effect of the "managerial functions" clauses is thus to give the unions powers of delay in suggested alterations to wages, hours, and allied matters which they consider adverse to their interest and which spring from a local level, but to deny them any such resource in relation to other conditions of employment.

Under the Agreement, the Crossley strikers were, therefore, definitely in the wrong since the selection of workers for dismissal is just such a "managerial function," in relation to which it is improper for a stoppage to take place until the "York" procedure is exhausted.

6

The discretion to which managements were formally entitled under the 1922 settlement was, however, in any case limited in practice on the workshop floor by the resistance of trade unionists to its arbitrary exercise. "Acts of management" going beyond limits set by workers' general conceptions of reasonable practice and the conventions of particular establishments were always liable to meet manifestations of

"craft solidarity." More recently, managerial discretion in the employment and dismissal of workers was greatly restricted and the field of joint consultation in such matters greatly extended, by the labour and production controls introduced in the Second World War.

The Essential Works, the Restriction on Engagements and the Conditions of Employment and National Arbitration Orders, though voluntarily accepted, all limited in some way the personal freedom of workers and the freedom of unions in regard to the methods adopted in pursuit of their members' interests. They limited the discretion of employers also, however, and imposed additional obligations on them in the matter of wages and working conditions. They also provided for a wide variety of forms of trade union participation in the operation of the controls, of consultation with workers on the job, and even of direct allocation of responsibility to workers' organisations for matters previously not accepted as within their scope. Formally, few of these infringed directly on internal managerial discretion. Under the Essential Works Order, for instance, Works Committees were given certain powers in relation to the employment of workers outside their own trades but they were not to interfere with "managerial functions." In practice, however, it was impossible to draw such a fine line between organisational questions in fact interrelated. The tendency was strengthened by the pervasive influence of the Government contracting system—which in effect made it possible for unions to appeal over the heads of local managements to the purchasing Ministry—by the growth of trade union membership and the consolidation of union workshop organisation, and by the conclusion in 1942 of the agreement providing for the establishment of Joint Production Committees. All these things were done to provide vehicles for workers' co-operation in securing war output and to ensure that the controls worked as fairly and smoothly as possible; their effect, however, was virtually to subject the whole range of managerial discretion to some form of joint consultation.

Certain of these forms applied particularly to the employment and discharge of workers. Some engineering unions were

themselves authorised to act as employment agencies. The employers' capacity to discharge, or retain, workers was subject to controls and to scrutiny by local Manpower Boards which included union representatives. In fact consultation also took place—either directly, or indirectly through their union, with workers in the firm involved in any question under this head. Of particular importance were the formulation, by the representative Engineering Industry Advisory Panel, of an agreed procedure for the selection of workers for internal transfer within the munitions industries which was also adopted for the drawing-up of redundancy lists during the initial period of post-war conversion, and the system by which "previous consultation" on such redundancy lists might take place through the National Service Officers.

With the withdrawal of labour controls the "managerial functions" clauses of the 1922 Agreement were no longer inhibited from operation, save for certain legal provisions, at present in suspense, for the restoration of "trade practices" relaxed under war-time procedures. The termination of government contracts eliminated another compulsive element in the system of joint consultation. The strength of labour organisation in the workshops, the common support of unions and employers' associations for measures to facilitate post-war production, and force of now-established custom were, however, sufficient to ensure that the practice of joint consultation in employment questions persisted in many firms although its direct effectiveness in production proper appears to have declined. The engineering employers' Federation, however, has always insisted on the strict validity of the "managerial functions" clauses of the 1922 Agreement in cases where these have been questioned, and occasional attempts—not very firmly pressed—by the unions for revisions have not been favourably received.

It nevertheless remains so that the view expressed by strike-leaders in such disputes as that at Crossley Motors that they had a right to "previous consultation" on redundancy derived from the recent practice of the industry and was often

supported by them by reference to neighbouring firms where understandings embodying this existed.

7

The "Provisions for Avoiding Disputes" of the 1922 Memorandum demand that any question in dispute shall first be discussed between the workers and management directly concerned : it may then be referred to a "Works Conference" at which local officials of the unions and employers' federation may be present : if not resolved the question may be passed on to a "Local Conference" of representatives of the area employers' associations and of the unions, to be held within 7 days of an application for such a meeting : the issue may finally be reported to a "Central Conference" between the national employers' federation and the national representatives of the unions, which is held monthly at York and is competent to discuss questions referred to it at 14 days' notice. "Failure to agree" may be recorded at any stage, and the Agreement incorporates no provision for arbitration, local or national. This procedure is modified by certain additional provisions, taken over from the 1919 "Shop Stewards' Agreement," for the appointment and recognition of Shop Stewards as competent negotiating agents at the works stage of a dispute.

It was not apparently questioned by the Crossley shop stewards that the matter in dispute might be dealt with after the event under this procedure : their claim was, however, that in fact local issues referred to the York precedure took many months to get to Central Conference discussion if no agreement was reached at lower levels ; that the attitude of the employers' federation made it unlikely that agreement would be reached at lower levels ; that in the meantime changes of practice by "act of management" became virtually established custom ; that questions of dismissal of workers, particularly, would be of only academic interest at the final stage ; and that in any case there was no guarantee of a settlement at Central Conference itself.

8

This latter possibility is, of course, implicit in the 1922 Agreement. One of the war-time controls which is still in

force, however, is the provision of the Conditions of Employment and National Arbitration Order, 1305, for the reporting of disputes to the Ministry of Labour and for their reference to compulsory arbitration. Under Order 1305, referable disputes fall under one of three heads, which are, summarily : the terms of employment (wages, hours, etc.) ; the conditions of labour ; and the employment or non-employment of workers. The Crossley dispute and those other disputes referred to clearly fall in the last category, and the strikes were thus illegal. In 1947, however, the power of the Minister to refer disputes to arbitration was challenged. The Chemical Workers' Union claimed that certain members had been "victimised" after a dispute (*not* a strike) by dismissal ; the National Arbitration Tribunal upheld their view and awarded that the workers be reinstated. The firm concerned (H. Crowther & Co.), challenged at law both the Minister's right to refer the dispute, which they held no longer existed because the workers had been dismissed, and the N.A.T.'s power to award reinstatement.

The High Court upheld the Minister's power to refer such a dispute to the N.A.T., but denied the competence of the latter to award reinstatement. It held that the powers of the N.A.T. in relation to the employment or non-employment of workers were different from those in relation to terms and conditions of employment ; any award of the N.A.T. under the latter group became an implied term of contract of all workers covered : no court of equity could, however, order a contract terminated legally according to its terms to be resumed. No more could the N.A.T., therefore, make an award to this effect. The judgment thus prevented the N.A.T. from doing more in such cases than expressing an opinion that one side was in the right. In effect, arbitrators in subsequent instances have confined themselves to examining whether acts referred to them infringed existing agreements : thus in the Port Talbot case (W. J. Furse & Co.), an arbitrator appointed by the Minister of Labour under the procedure of the Electrical Contracting Joint Industrial Council was unable to find that there existed any *accepted* practice within the industry whereby

shop stewards were exempted from "the usual procedure" in redundancy.

There is thus no likelihood in such disputes that a reference to arbitration would produce a favourable opinion : no method of enforcing such an opinion if secured : and—since Order 1305 also precludes the Minister from referring disputes to arbitration until the full negotiating procedures available in the industries implicated are exhausted—no means of putting such matters to a speedy test. Whether the strikers in such disputes as the Crossley affair have been clearly informed of all these things may be doubted. They may serve to explain in some measure their view that no good could come to them of waiting on "procedure," however.

9

So much for the general background of the Crossley dispute—the situation of industrial relations and of labour organisation in the engineering trades. As to the events immediately preceding the strike, the only public statement of these was made by the dismissed convenor of shop stewards himself, on behalf of the strike committee, at a meeting held at Deansgate, Manchester, on 6th March.

The account of events given by Mr. J. Blackburn was as follows : that, following a cut in local authority contracts for public service vehicles, the stewards were notified that there would be a 50% redundancy among fitters in certain sections : there was no consultation with the stewards on the names to be included in the redundancy lists—a request for consultation having been discussed previously with the management who had insisted, however, on their right to "hire and fire" as they thought fit. In this instance lists in each section were drawn up by the chargehand in consultation with his foreman, who in turn submitted them to the works manager. Mr. Blackburn stated that the list submitted by his chargehand had not included his name ; but that he was, however, among the first to receive notice of dismissal : and that the men supposed that his name had been added to the list by the management. An emergency meeting of the shops stewards was called which asked the works manager to

withdraw their convenor's dismissal notice : this request was refused. Permission to hold a meeting of workers in the works canteen being also refused, the stewards called a meeting outside the works gates, which agreed to "withdraw labour." They next returned to the works manager and offered to suspend action if the management would reinstate the convenor "temporarily" so that negotiations could take place. They understood this proposal to be accepted, and went away to tell their members that the strike was off. They then returned to the works manager's office to discuss the matter and were informed that Mr. Blackburn's dismissal was confirmed.

The assumption of the shop stewards was that in between the second and third meetings with the works manager, the management had consulted the office of the Manchester District Engineering Employers' Association, and had been advised to stand firm on the terms of the 1922 Agreement. The stewards were throughout emphatic in their belief that the management would have been willing to negotiate but for the intervention of the Employers' Association. Some evidence of the source of the firm's attitude in the national employers' federation's conception of "managerial functions" was, however, also to be found in the apparent conviction of management and local employers' representatives both as to the strength of their support and that no reference to the "York" procedure would alter the original managerial act.

On Wednesday, 8th February, 1,100 members of some seven trade unions employed at Crossley's struck.

10

It is, of course, extremely difficult to get a complete picture of all the circumstances of a strike. The statements of the various parties are made from and in support of their special viewpoint and with a varying eye to their official commitments and the ultimate settlement. The comments of individuals involved often serve less to indicate the exact state and sequence of affairs than their own present attitudes. This is still more the case where the internal chain of events which may have prepared the way for a strike is concerned. The

past is in any case always seen through the spectacles of the present.

Some of the Crossley strikers considered that the firm had always been reluctant to accept trade union organisation : many claimed that since the merger of the firm, in 1948, with the A.C.V. combine the management had been trying to economise at their expense, and cited a series of rate and bonus disputes in 1949 : others complained that in spite of an efficiency drive, the firm was not obviously anxious to consult the workers on production, and that the Joint Production Committee was moribund : while the shop stewards stated that it was necessary to threaten stoppages to get minor improvements in working conditions and that Blackburn's dismissal was connected with his championship of the men's interest. Among people connected with the employers, it was said that the management had been "too soft" with its workers, who had been restricting production and were now reacting because the employers were asserting their rights. Against these viewpoints, the union of one group of craftsmen which did not take part in the strike considered the firm a good one, while other managerial representatives said that the firm's relations with its workers—including the dismissed convenor—had always been good and attributed the strike to Communist influence.

It is not necessary to examine such interchanges in detail, however. Incidents reported in support of these statements represented situations which are by no means abnormal in the engineering trades. Its present system of industrial relations carries the potentiality of such disputes as the Crossley affair within it and is a sufficient explanation.

The questions in dispute in the Crossley strike were themselves disputed. The only undisputed fact, indeed, was that 62 fitters had been discharged, including the convenor of shop stewards. The management denied that it had added the latter's name to the redundancy lists drawn up in the workshop. From the original charge of "victimisation," however, a number of related issues became involved, including the general questions of the security of employment of shop stewards, and

the order of discharge of men on redundancy. The strikers claimed that a principle of "first in, last out" should have been adopted ; the management first pointed out that no such principle had been agreed between the unions and employers' organisation, and later stated that it had, however, been followed in this instance. The strikers contradicted this by quoting cases where it was alleged men with long service in the firm had been discharged and newcomers retained. The management said that an exception had had to be made for "key men." And so on.

It was left to the Manchester District Engineering Employers' Association to define the essential point at issue. In a statement issued on 6th March, its Director said : "The real issue behind this dispute . . . is a challenge by the men of the Company's right to select men who shall be included in any redundancy list. *This is a managerial function . . .* " (my emphasis).

11

The largest group of strikers were members of the A.E.U. A second union with a considerable membership involved was the National Union of Vehicle Builders. Relations between these two unions played a great part in the subsequent development of the strike. There were also members of the Electrical Trades Union, the National Amalgamated Union of Foundry Workers, the National Union of Furniture Trade Operatives, and the Amalgamated Society of Woodcutting Machinists among the craftsmen employed at the Crossley works and these joined the strikers. Some of the labourers, organised by the T. & G.W.U., were apparently also among them.

There were also some 200 members of the National Union of Sheet Metal Workers and Braziers in the works, and a small number of pattern-makers. These did not come out on strike. Relations between the sheet-metal workers, particularly, and the members of the other major unions in the firm were not notably cordial. In vehicle construction, the "tin-bashers" are a declining craft, giving way to machine-pressing. In Crossley's they were inclined to look down on the fitters, turners and other mechanics, and were suspicious of the

"imperialism" of the A.E.U. When the body-building department was moved from an older site into the new main works, the sheet-metal workers arrived to find A.E.U. members doing some work they regarded as theirs, and the subsequent inter-union dispute was remembered. They were not represented on the unions' Works Committee and retained their own shop committee. After the strike broke out, the Chairman and Secretary of the District Committee of the Confederation apparently asked them to join. They consulted the General Secretary of their own union (who was, incidentally, also President of the Confederation itself) who advised them that the strike was "ill-founded." A week after the strike began, however, their own district committee asked the Crossley management to reinstate Mr. Blackburn, without success, and some of the sheet-metal workers in other firms apparently also joined the token strike called in the Manchester area at a later stage.

The members of the United Pattern-makers' Association apparently shared the "old-style" craft outlook of the sheet-metal workers. It may not be without significance that at the time of the dispute the Patternmakers' Association was balloting its members on a proposal that the union should withdraw from the Confederation of Shipbuilding and Engineering Unions, following a demarcation dispute with the A.E.U. The labourers seem to have followed the craftsmen in the shops where they were employed. Shop stewards of the A.E.U. and other tradesmen's unions among the strikers complained that the labourers were inert and apathetic : that their pay was too low and they grumbled about it, but did not seem keen to do anything about it for themselves.

12

Once the strike was under way, it was natural that the strike committee should attempt to secure wider support. In making their reports to their several unions' district committees, the shop stewards involved would of course wish to obtain "official" approval and strike pay for their members in dispute, and the sympathy of union branches in the area might assist in securing a favourable attitude from the union

executives. The belief that the firm was being supported, if not actually directed, in its attitude by the district employers' association, also led the strikers to attempt to mobilize wider sympathy. Very early in the strike, members of the strike committee approached the employers' association direct, and apparently came to the conclusion that they had to direct pressure at the association as a whole.

The tactic of "extending the front" is one which is also recommended by the unofficial shop stewards organisations ; it is defined in a statement issued by the National Joint Shop Stewards' Council of Engineering & Allied Trades, meeting in Manchester towards the end of the strike. This statement warns workers against attacks by employers on shop stewards and declares : "In the case of attempted victimisation, there must be a swift development of 100% solidarity, starting in the area or town and widening out as necessary."

There is a strong Communist representation in the unofficial bodies, and the tactic outlined also coincides with the method of industrial campaigning which the Communist Party has specially developed of taking every opportunity to develop militant action by workers on day-to-day issues, linking these with general political questions in the process.

The Communist interest in the dispute was to be expected. At first sight, therefore, a further feature of the Crossley strike appears unusual : the apparent enthusiasm for the strike of leading Catholic trade unionists in the area. The Catholic interest in the dispute reflected both national trends and local events. In 1947 and 1948 associations of Catholic trade unionists were formed in several dioceses, in the first instance with the intention of combating Communist influence in the unions. Although regarded with no obvious favour by non-Catholic union leaders, they played a considerable part in internal union anti-Communist movements, and received an increasing attention from members of the hierarchy. In early 1948 the Roman Catholic Archbishops of England and Wales issued a declaration in general support of this movement. At the time of the Crossley strike preparations for the first meeting of a National Federation of Catholic Trade Unionists were

in hand. At a meeting of Catholic trade unionists at Brentford in December, 1949, Bishop Beck defined the Catholic industrial ideal as a corporate organisation, and deplored that "force of circumstances obliged the trade union movement to develop in this country in function rather of the defence of working-class interests than of the well-being of industry as a whole." Those Catholic trade unionists of the Manchester area who departed from this conciliatory attitude in relation to the Crossley dispute no doubt shared the view of other supporters of the strikers as to the principle involved. There was, however, also a specific local background to their partisanship.

In late 1948 a violent internal dispute in the Manchester area of the Electrical Trades' Union achieved national publicity. The chief shop steward of the E.T.U. in the Metropolitan-Vickers Works, Mr. C. Blackwell, who was also a prominent local Catholic and Labour man, had his credentials withdrawn by that union's district committee after a minor shop dispute in which a Communist shop steward of the same union was also involved. The affair developed into a major battle with the leadership of the E.T.U., whose executive had a Communist majority, conducted on the one side with the full panoply of union rules and procedure and on the other *via* public meetings and a blaze of press publicity. Anti-Communist trade unionists in other unions also took some part in this affair, but a considerable section among the area's shop stewards, branch officers, and district leaders appear to have remained aloof, considering that apart from the wrongs and rights of the case, the methods of publicity adopted were inappropriate to an internal union matter and damaging to the general standing of trades unionism and to its negotiating strength in the works concerned. In some degree, therefore, it may have been that the Crossley dispute offered an opportunity to local leaders of the movement for Catholic trade union association both to "dish the Communists" by beating them at their own game of militant rank and file leadership and to reassure this considerable "neutral" section as to their own active attachment to trade union principle.

Finally, and at a later stage in the dispute, the official support given to its members by the National Union of Vehicle Builders played a part in widening its area of involvement. The N.U.V.B., a medium sized union of some 40,000 members, is an amalgamation of craft unions which includes one of the oldest of British trade union organisations—that of the coach-builders. In the two industries in which it operates—motor vehicle construction and railway coach-building—it faces formidable competition from larger unions and particularly, in the former trade, from the A.E.U., which, moreover, has itself formed, since an amalgamation with a small (and predominantly Manchester) union of coachbuilders, a vehicle-builders' section. The N.U.V.B. includes in its membership, besides bodybuilders proper, a number of other tradesmen such as painters, trimmers and welders. Its members are, by and large, prevented from working outside the vehicle trades by demarcation rules. In its main field of interest—the automobile industry—it has experienced, within the working life of many of its members, a greater change in working methods and materials than most unions. These situations the N.U.V.B. has endeavoured to meet by aggressive tactics. Its members claim all work "above the chassis" (apart from electrical fitting) as theirs, irrespective of the materials or techniques involved. In some few establishments they have gone further and organised *all* workers employed into the union. Its executive continually urges its members to welcome and to adopt new techniques, to "do anything, if it pays the rate." In the course of this policy it has inevitably become involved in demarcation conflicts with other unions. The union has, too, been an advocate of radical industrial policies in the T.U.C. and apparently impatient of the "Conservatism" of the big unions. Once the N.U.V.B.'s decision to make the Crossley strike official was taken, N.U.V.B. members and local officers were anxious to see external justification given to their own executive's action by similar support from other unions.

13

The trends in the Crossley strike were illustrated in the strike committee itself : its chairman was a young A.E.U.

ex-serviceman, an active Labour Party member and W.E.A. student : the dismissed convenor himself, another A.E.U. man, was typical of the "serious" middle-aged skilled trade unionist : the other members included a prominent local N.U.V.B. leader whose outlook seemed broadly that of the radical labour craft unionist of the inter-war years: two Communists: a Catholic : and an old A.E.U. member who was alleged to "know all the rule books by heart."

The contrast of these trends was equally illustrated by the platform at the public meeting in Deansgate already referred to, held some four weeks after the dispute broke out. Here the member of the N.U.V.B. drew a comparison between the attitude of the A.E.U. executive and that of his own (which had by then recognised the strike) extremely unfavourable to the former, contrasting the identity of the N.U.V.B.'s part-time executive committee with its rank-and-file and its militancy in industrial policy with the alleged "remoteness" of the full-time A.E.U. executive from its membership. The only non-Crossley man among the speakers was a prominent leader of the local Association of Democratic Trade Unionists (which had been formed during the Blackwell affair) who was cheered heartily for stating emphatically that the strike was not an agitation to embarrass the Government but was designed to bring Crossley's into line with "decent employers" in recognising joint consultation. Another member of the strike committee then insisted, apparently to the embarrassment of the chairman, and equal appreciation of part of his audience, on making a further speech somewhat ambiguously warning the workers against doubtful friends but at the same time referring with approval to the unity of Left and Right displayed, and especially notable for an appeal to A.E.U. members to "get the executive out."

14

After the strike committee's abortive visit to the Manchester and District Engineering Employers' Association, the development of the Crossley strike followed in the main the rise and fall of the strikers' hopes of external support. At the level of rank-and-file union leadership this appeared

widespread. A week after the strike began the Manchester and Stockport District Committees of the A.E.U. declared their support for it, and the Manchester District Committee of the Confederation sent a request to that body's General Council that it recommend its affiliated unions to declare the strike official. Within a fortnight the Confederation's shop stewards of the area met unofficially and agreed unanimously to ask their members in the separate works for a mandate to strike. Approaches were made directly by the strike committee to other works in the Associated Commercial Vehicles group ; through the unofficial shop stewards' organisation, promises of financial support were received from workers in firms outside the Manchester area, and a strike fund was opened.

The attitude of local union officials was in general more reserved ; some were outrightly sympathetic to the strike : others equally strongly opposed : the attitude of the generality of the district and area organisers of unions other than the A.E.U. and the N.U.V.B., however, seemed a mixture of sympathy in principle with the ground of the dispute and hostility in practice to unofficial action. They and their executives were in the main waiting to see what the A.E.U. leadership would do.

The top point of this phase of the dispute was reached when the executive committee of the N.U.V.B. meeting in Manchester on 25th February, made its decision to give the strike official recognition and to pay its members involved dispute pay. After the recognition of the dispute by the N.U.V.B., it seems that most of the other "minority" unions at Crossley's also found means of paying dispute benefit to their members by, for instance, raising no objection to grants for this purpose made by their local branches.

16

The A.E.U. members, however, remained without dispute money, and the centre of interest then moved to internal developments in the A.E.U. The Stockport District Committee of that union, within whose area Crossley's lay, had already asked the A.E.U. executive committee to recognise the dispute :

the executive first returned a request for "further information" : the district committee then met with the District Organiser of the A.E.U. : the meeting seems to have been a stormy one : it was reported that during it the committee resigned *en masse*, only to come back and confirm their recommendation that the strike be made "official." After the N.U.V.B. decision the strike committee interviewed the A.E.U. District *Secretary*, and came back to report their expectation that recognition from the A.E.U. would follow. On the following day, however, the refusal of that union's executive committee to support the dispute was announced to a meeting of the strikers by the District Secretary himself, apparently in terms which left little doubt of his own reluctance to convey the decision.

The first reaction to the A.E.U. decision was an extension of unofficial action : that evening a meeting of Confederation shop stewards, at which some 27 factories were represented, agreed unanimously to call a token half-day strike of the area on 6th March, with the stated object of putting pressure on the employers' federation to have Mr. Blackburn reinstated temporarily. On the eve of the token strike, however, the Confederation stewards met again to receive the news of a change of front by the Stockport District Committee of the A.E.U. The latter had again met with their District Organiser, this time deputising for the executive member for the area, and after hearing a lesson on the union's rules, had decided to recommend the strikers to return ; the state of mind of the District Committee being no doubt further illustrated by the somewhat illogical accompanying recommendation to the executive that the A.E.U. members on strike be given dispute pay for the period to date, and that Mr. Blackburn himself be granted "victimisation" benefit. By the time, too, the Confederation stewards were apparently also aware that they had over-estimated the extent of the response they could command to the token strike.

There are some 140,000 engineering workers in the area of the Manchester District of the Confederation of Shipbuilding and Engineering Unions : there were some 2,000 people at the public meeting called by the committee on the day of the

token strike, of which perhaps three-quarters were engineers. Representatives of 35 factories attended the last-minute meeting of Confederation stewards : at that meeting some stewards apparently claimed that insufficient time had been allowed to prepare such a venture. In any event, of the 37 establishments to which requests to participate in the token strike had been sent only four, according to press report, actually ceased work at midday in accordance with the stewards' arrangements, although deputations from other factories attended.

17

Strike leaders suggested, that the response would have been greater if there had been more time to prepare—though time was not a commodity which the Crossley strikers, of whom several hundreds were still without dispute pay, could squander. Certainly, it is not easy an task for any movement involving the whole union membership in a large establishment to be organised through the normal machinery. In a big works a shop steward may be responsible for up to a hundred workers. He will have a job of his own to perform, but the procedure agreement permits him to book time spent on disputes at the "plain" rate : in fact, however, the time a steward is able to give to union duties alone—quite apart from the various unofficial activites, respectable or otherwise, in which he may become involved—varies considerably. In some works it may be customary to give stewards relatively unexacting tasks : on the other hand it has by no means been unknown for stewards to have jobs allocated to them which are particularly demanding. The gap between the "plain" rate and normal earnings would involve most stewards in a considerable loss if they booked much time for disputes ; though in some large firms again managements allow certain stewards, *e.g.* members of works' committees, etc., to book time on union business at their average rate of earning. The interpretation of "dispute time" also varies according to custom and relations with the management. Only on critical occasions are matters to be dealt with by general meetings ; in other cases the steward has to interview his members separately, and even in

such an affair as a collection for a man who has had an accident —which a steward would normally be expected to carry out— "everybody likes to ask why and argue a bit," as one steward put it. Thus the carrying through of such an action as a strike vote in sympathy with workers in dispute in another establishment, involving considerable personal argument, may be a lengthy affair.

This point apart, however, it seems that the Confederation shop stewards also had not estimated accurately the strength of their own influence over the rank-and-file. In one case at least the authority of the shop stewards was such that they had no need to take a vote of their members. The Confederation steward brought back the Manchester meeting's decision to his own shop stewards' committee : they in turn simply instructed their people to stop work at the time arranged. In general, however, the reaction was not so automatic. At some works—among them the most important—the stewards were themselves by no means so united on the issue. Some were opposed on constitutional grounds : others, although sympathetic to the Crossley strikers, were reluctant to take their sympathy to the point of challenging their own employers. The attitude of the rank and file of union membership seemed to vary even more widely. Several shop stewards expressed their concern that they seemed to be "out of touch" with or "too far in advance" of their members. Neither was this to be attributed solely to apathy. Non-active members of the unions involved were at least sufficiently informed as to the Crossley dispute to be aware that there was a difference of opinion between the A.E.U. executive and the shop stewards' leadership. They appeared sensitive to any lack of resolution on the part of their own workshop leaders even if unexpressed. A reserved and non-committal wariness seemed common : workers might make an individual cash contribution : they would conform "if the others came out" : but were not anxious to run into a dispute themselves in the presence of divisions among their own people.

It was incidentally notable that even among the Crossley strikers themselves attendance at the frequent meetings called

by the strike committee averaged only about a third of the men actually out : the others stayed at home and followed the press reports : and any reader of a single popular daily would have been very ill-informed.

In particular, the Confederation stewards seem to have been led to form an over-optimistic picture of the response they might expect from the largest works in the Manchester area, Metropolitan-Vickers, by the apparent enthusiasm of that establishment's representatives at their meetings, who included Mr. Blackwell himself, the centre of the factional conflict of the previous year. In point of fact, the Metropolitan-Vickers stewards had not got to the point of a decision by the date of the token strike.

18

On the heels of the relative failure of the token strike, several other events followed to dash the Crossley strikers' hopes of a favourable settlement of their dispute by external agency. The refusal of the Ministry of Labour to intervene was announced. This might have been foreseen in view of the terms of Order 1305, already referred to, which prevent the Minister taking action in a dispute until such formal procedure as exists in the industry concerned is exhausted. The adverse decision of the arbitrator in the Port Talbot case, which had a foundation similar to their own dispute, was published. And the Confederation's General Council, meeting in York, with the General Secretary of the Sheet Metal Workers in the chair, so far from recommending its affiliated unions to support the strike, apparently received a complaint from the A.E.U. that the precipitate action of the N.U.V.B. in recognising the strike constituted a breach of a Confederation rule. The rule concerned was in fact so vaguely worded that it could not be held to constitute an obligation on individual unions to consult with others before taking action : the Confederation's own Council decided to take no action either way in the affair : nevertheless the N.U.V.B.'s local leaders appeared somewhat chastened. And on the evening after the token strike, the Confederation stewards received the news that a ballot on sympathetic strike action in Metropolitan-Vickers had failed

to secure the two-thirds majority which the firm's stewards had decided was appropriate.

The Metropolitan-Vickers representatives at the Confederation stewards' meetings still, apparently, held out the hope of active support from their members, and encouraged the Crossley men to hold on in that expectation: this a meeting of strikers the following day decided to do.

19

The key to this last phase of the strike thus became the situation in Metropolitan-Vickers. Employing some 23,000 workers of whom probably about 17,000 are engineering operatives, the firm is the most influential member of the Manchester District Engineering Employers' Association. The Vickers group of concerns, with which Metropolitan-Vickers is closely related, are the most powerful among the members of the national engineering employers' federation. With its interest in many sections of heavy industry, shipbuilding and engineering, it represents one of the major foci of the closely-meshed network of British industrial organisation. In a sense, therefore, in concentrating their last effort on the Trafford Park works, the Manchester stewards were attempting to challenge the engineering employers' attitude at a major source of its strength.

More materially, the works is a sounding-board of trends and movements among engineering operatives. Its workers include members of some 16 engineering unions, represented in the works itself by about 150 shop stewards. Fifteen of these, appointed by their fellows, form the Works' Council, and many of the inter-union and politico-religious conflicts which culminated in the Blackwell affair of 1948 had centred in this body. After the Blackwell incident, during which several of the members resigned, the Works' Council had been reconstituted, and in the process A.E.U. representation had been reduced and agreed at 9 : 11 members of the A.E.U. in fact sat on the Council, however, because the other unions had been unable to agree on the allocation of the remaining seats. Of the members, one was a Communist, two were Catholics—

including Mr. Blackwell himself, who, after his final expulsion from the E.T.U. in 1949, had been accepted into the T. & G.W.U., and now represented that union on the Works' Council.

When the Works' Council received the Manchester Confederation stewards' call to the token strike, the council members were apparently unable to decide on a definite line. The Crossley dispute had evoked intense discussion among the active trade unionists of the firm. It seemed that some departments were in favour of coming out, and pressed the Works' Council for a lead. Some members of the Council, however, felt that sympathetic strike action would invite retaliation by their own management : an informal suggestion to the management that it put pressure on the Employers' Association for the settlement of the Crossley dispute (there was an agreement providing for consultation on redundancy in Metropolitan-Vickers) had met with the reply that Metropolitan-Vickers would not intervene and would support the Association to the extent that they were called on to do so. Some A.E.U. stewards were unwilling to go against their union executive. In the end the Works' Council decided to leave it to the workers themselves and to hold a meeting at which the facts of the Crossley dispute could be given. After the meeting some departments apparently wished to vote immediately by show of hands : the Works' Council, however, decided to hold a ballot, without itself making any recommendation. The ballot result was a 53·4% majority for striking, but a large proportion of the operatives had not taken part for one reason and another, and the Works' Council had itself ruled a two-thirds majority as necessary.

The Metropolitan-Vickers representatives at the Confederation stewards' meeting returned to urge the Works' Council to "organise further activity." Workers in the West Works of the firm were reported to have held a meeting of their own and to be urging strike action. The Works' Council was, however, unwilling to organise a second strike ballot. The reversal of the Stockport District A.E.U. Committee's attitude was known. The sense that the employers would act together

was strengthened by the withdrawal of recognition from the shop stewards in one "federated" firm whose workers had taken part in the token strike—an act so precisely within the terms of the 1922 Memorandum, which makes recognition conditional on the observance of procedure agreements, that they suspected it to be advised by the Employers' Association. Some stewards were asking why neighbouring works to Crossley's had not supported the strike, and why Metropolitan-Vickers' workers should be "picked on" now. A week after the token strike the Works' Council met the Crossley strike committee and told them that they would continue to organise financial support but could not recommend strike action to their members. On the same day the failure of a deputation (the second from the Crossley strikers) to persuade the executive of the A.E.U. to change its mind was announced.

20

The Crossley strikers were not altogether unprepared by now for the end. Their stewards were already talking in terms of "going back in a body or not at all" before they met the Metro-Vick Works' Council, and some of the men were sceptical that it would do much good if the Trafford Park men did strike. Funds were also low. The N.U.V.B. members were getting £2 a week in dispute pay, but the A.E.U. men were without such resource. The younger men, without families, had been drawing from ten shillings to £1 in P.A.Y.E. rebates each week. Some of the married men were receiving public assistance (presumably at the standard rate) but many were not willing to apply for it. The strike committee had received a sizable sum in contributions from other factories, but spread over 1,100 men it did not amount to much more than a pound or so apiece.

On 15th March, five weeks after the start of the strike, a strike meeting authorised the committee to meet local union organisers to discuss a return to work on condition that there was no victimisation and that negotiations begin on Mr. Blackburn's reinstatement and on the principle of joint consultation in redundancy : the terms were agreed with union officials the following day ; the Crossley management and the

Employers' Association agreed to the holding of a Works' Conference under the "York" procedure after the return : the next week the men were back at work.

On the night of the strike meeting which took the decision to call off the strike, however, a meeting of some 60 shop stewards from 23 factories in the area agreed to form a Manchester Shop Stewards' Council to be affiliated with the unofficial National Joint Shop Stewards' Council of Engineering and Allied Trades "so that in any similar dispute in future there would be an organisation on the spot to help and take action" to quote the statement of its newly-appointed chairman (who was also the chairman of the Crossley strike committee).

21

In the upshot, the result of the Works' Conference, which was held shortly after the return to work, and, in accordance with the 1922 Memorandum, with officials of the trades unions and of the Employers' Association present, was a compromise between the strikers' demand and the original stand of the firm. It was agreed that the dismissed convenor be offered re-employment as soon as a vacancy for his trade arose and that the shop stewards would be consulted in future redundancies. The latter concession was rumoured to have been made by the management contrary to the advice of the Employers' Association ; the management itself was at pains to make clear in a subsequent statement that it did not imply that future dismissals for redundancy would be subject to the shop stewards' approval : nevertheless that they should be subject at least to prior discussion and amendment must be inferred, since it would be inviting trouble to notify redundancies in advance to the men's representatives and then to ignore their comments on the list. At least it seemed to be the firm's desire to stretch the "managerial functions" clauses of the 1922 Memorandum as far as possible to avoid future disputes. The press estimated that the men had lost some £40,000 in wages during the strike : but the firm had also lost several weeks' production : the men had returned in a disciplined way and under the advice of their strike committee ; the firm apparently wished to be conciliatory. More

remarkable was the subsequent behaviour of the A.E.U. executive, which also thought it advisable to confer a sort of posthumous recognition on the strike by awarding its members dispute pay for the period during which they had been out ; an action which, if inconsistent with its declared attitude during the affair, was no doubt equally discreet.

22

The effect of this account, however, is less to record the history of an individual dispute than to illustrate the type of situation which may arise from the present human relationships of the engineering trades. It argues that many features of the engineering situation combine to provide ground for conflict : the existence of a "no man's land" where rights of control and consultation are disputed, despite the "managerial functions" clauses of the 1922 Agreement ; the insistence on the strict interpretation of those clauses by a closely-welded Employers' Federation ; the character of labour organisation, both official and unofficial, among the engineering workers ; the customary method of workshop bargaining ; the delays and uncertainties of the higher negotiating procedure ; the inadequacy of compulsory arbitration in dealing with certain disputed matters.

To point this situation without suggesting remedies might, however, well be regarded as pious. Here certain lines of action appear to indicate themselves : an extension of "prior joint consultation" in relation to acts of management : a review of negotiating procedure to expedite the settlement of disputes : an overhaul of engineering trade union organisation, on the lines of more effective federal unification of the separate unions, and of a closer integration of the shop steward system within both the separate organisations and the Confederation itself : and so on.

To the extension of effective joint consultation and an improvement in dispute procedure, the current conception of "managerial functions" of the National Federation of Engineering and Allied Employers must be regarded as an obstacle. A rigid insistence on the definition of 1922, in face of the past decade's general development in joint consultation and in the status of workers, invites the comment that it reflects an

attitude more appropriate to the year of its origin than that in which it is now expected to operate. The definition is in any case not possible to establish in practice except by *force majeure* : it does not accord with current fact.

It cannot but be a commentary, too, on the limited effectiveness of the overall organisation of the engineering trade unions that, at the end of a decade of full employment, during which trade union membership has reached its highest recorded peak, their major relations with their employers should still be governed by a settlement accepted in a year of depression and defeat : and that they should be so little able to secure common policy and action in disputed matters between executive and executive, and executive and membership.

23

To urge the obvious is not always helpful, however. Joint consultation has been advocated in general terms by individuals and organisations for many years. There have been strong advocates of closer unity among the leaders of engineering trades unionism since its inception. The case for the absorption of workshop leadership in trade union structure is widely understood.

In practical terms, however, an extension of "prior joint consultation," for instance, will be opposed by employers partly from fear of "workers' control," partly for the more practical reason that such procedures might give workers' representatives power to delay indefinitely necessary executive decisions : nor would it necessarily satisfy the workers because, although some consultation is better than none, it does not of itself carry any guarantee that their viewpoint will ever be accepted. As regards the improvement of union co-ordination, union executives will be unlikely to concede greater authority to either the Confederation or to their own shop stewards unless they know in advance the way in which that authority is likely to be applied, and to what they are committing themselves thereby. Nor would merely constitutional elaborations meet the position. An attempt to speed up negotiating procedure by imposing arbitrary time-limits on the upper

stages would be artificial because there is no method of compelling people who don't want to agree to do so. The introduction of arbitration at one or several levels of the procedure supplies no solution because all these engineering disputes involve matters of principle, and in such cases arbitration is notoriously ineffective.

All the problems of the present engineering situation are in fact inter-twined and cannot be solved in general terms. The root of the matter is the comparative absence in the engineering industry of practical formulae, agreed between unions and employers, unions and unions, or union executives and shop stewards, which can determine the action of these various parties at the point at which the different aspects of the industry's labour situation interlock—the workshop floor. In their absence people who may themselves be ready advocates of progress in principle are reluctant to initiate or accept it in practice because they do not know how it will work out.

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The immediate cause of many engineering disputes is the gap between the conditions and relationships laid down in the national agreements, and those established in practice or conceived by workers to be reasonably established in practice. The issues of redundancy and the status of shop stewards are only two of a series of related points at which this divergence between the formal and the customary—or the workers' understanding of the customary—is apparent. It is most obvious in the industry's wages-structure : but it extends throughout the field of the employment and allocation of labour. This gap produces what almost amount to a number of standard patterns of dispute, one of which has been illustrated above. Despite the evidence of the list of recent strikes with which this account opened, the consequences of this situation have been for some years minimised by full employment. The whole fabric of the industry's labour relationships is, however, inherently unstable : any onset of unemployment would tend to bring it down to the minimal foundation embodied in the national agreements, and to provoke more general conflict.

The practical line of approach to this situation appears to be *via* a systematic reduction of the area of dispute and potential dispute, an attempt to cover each of the standard issues of conflict by an agreed working rule. Thus, the simplest answer to the combined questions of redundancy and of the security of employment of shop stewards seems to be the general acceptance of a "first in, last out" rule for all dismissals other than those on grounds of indiscipline or incompetence. Many trade unionists have advocated that some special protection be given to shop stewards—in the way, for instance, of some special constitutional or even legal status. The general operation of a "first in, last out" rule would, however, at least make it impossible for a management to utilise a redundancy to discriminate *against* a shop steward, and would compel an employer who wished to sack a steward because he was a steward to do, more or less obviously, just that : an action which the unions should be capable of dealing with themselves. There are also arguments on the employers' side against such a limitation on their discretion in selecting workers for discharge as that involved in a "first in, last out" rule. Such a rule was, however, fairly generally applied in the period of post-war reconversion, is still applied by individual firms, and is a normal part of United States' union-employer contracts : in none of these instances has it had any notable ill-effect.

The result of the introduction of a series of working rules on these lines should be to reduce the number of conflicts : it would at least be to reduce the present recurrent battles on principle to more simple questions of whether or not an agreed rule had in fact been applied in a given situation.

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A final comment concerns the position of the Government in relation to the redundancy disputes. Compulsory arbitration has already been severely strained by its use as a vehicle for wage-stabilisation. There seems little point in maintaining the principle of compulsory arbitration in other matters where for legal reasons it cannot be effective in practice. Nor would it be likely that the National Arbitration Tribunal could be made an effective agency for the settlement of such disputes as the

Crossley affair in the absence of agreement on principle in the industry—if only because arbitrators will be reluctant to, in effect, legislate for industry, to create precedent and law where none exists. In questions concerning the employment or non-employment of workers—involving such matters as the position of shop stewards, union recognition, etc., the wisdom of any system of compulsory reference to arbitration in cases where no collective agreement exists or where the existing agreement is disputed on principle is to be doubted : a point which has been raised in relation to "reinstatement" issues both in the Minister of Labour's Joint Advisory Council and at successive Trades Union Congresses since the Crowther case of 1947. If arbitration cannot in fact settle such disputes, then the Government opens itself to a charge of partiality by hindering one of the parties if it makes arbitration in such cases compulsory. The dangers of this situation are illustrated, for instance, by the outcome of the arbitration decision given in May, 1950, in the Duplex Motor Bodies dispute : here, after an initial unofficial strike following the dismissal of its shop steward, the union concerned had referred the matter to arbitration. The adverse N.A.T. award was, it was reported, immediately followed by the dismissal of the entire shop committee of an allied union. Such events may well discredit arbitration in general in the eyes of workers.

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Manchester.

Politics in the North-West

(1) Introduction.

The growing interest in electoral statistics, which has produced so many studies of recent British elections, has failed so far to produce any analyses of the electoral structure and sociology of the several regions within the country. Yet the variations between these regions, which are apparent from the statistical tables given in the national studies, are so striking that it seems worth while to devote some attention to the regional behaviour, so that more meaning can be given to the frequent generalizations about party-strengths, "swings," "safe seats," and the like.

In the present article an attempt is made to consider the North-West of England—Lancashire, Cheshire, and the High Peak division of Derbyshire—a region containing 13% of the national electorate. It will be shown that in this region the Conservative Party is stronger than in the country as a whole ; that the accidents of the electoral system have deprived that party of the majority of seats to which its superiority in votes entitled it in February, 1950 ; that the withdrawal of the Liberal candidates would probably have been much more favourable to the Conservatives in the region than in the rest of the country ; that thirty-nine of the region's eighty seats are unlikely to change hands whatever the result of the next general election—of these seats seventeen are Labour and twenty-two Conservative ; and that the strengths of the two major parties vary considerably between the eight economic areas in the region. Attention will be drawn to the high participation record of the region, which is always better than that of the whole country, and it will be suggested that participation depends less on the anticipated closeness of the contest or the intervention of third-party candidates than on the social character of the area. The present electoral structure will be examined, and it will be shown that the distribution of seats within the region is more equitable than elsewhere. Finally, consideration will be given to the political effects of

TABLE I

VOTING IN THE NORTH-WEST IN 1950 AND 1945

	Year	LANCASHIRE				CHESHIRE				DERBY (High Peak)				REGIONAL TOTAL			
		C	Votes	%	MPs	C	Votes	%	MPs	C	Votes	%	MPs	C	Votes	%	MPs
Labour	1950	64	1,415,871	46·9	39	15	283,914	37·3	3	1	16,933	39·2	—	80	1,716,718	44·9	42
	1945	**66**	**1,296,602**	**49·9**	**51**	**15**	**264,633**	**39·0**	**4**	**1**	**15,454**	**38·9**	**—**	**82**	**1,576,689**	**47·5**	**55**
Conservative ...	1950	64	1,361,126	45·4	25	15	385,623	50·6	12	1	19,740	45·7	1	80	1,766,489	46·2	38
	1945	**66**	**1,057,173**	**40·7**	**15**	**15**	**313,869**	**46·3**	**11**	**1**	**18,113**	**45·5**	**1**	**82**	**1,389,155**	**41·9**	**27**
Liberal	1950	47	230,485	7·6	—	14	90,993	11·9	—	1	6,539	15·1	—	62	328,017	8·6	—
	1945	**31**	**212,105**	**8·2**	**—**	**10**	**84,578**	**12·5**	**—**	**1**	**6,230**	**16·6**	**—**	**41**	**302,913**	**9·1**	**—**
Communist ...	1950	11	6,553	0·1	—	2	1,360	0·2	—	—	—	—	—	13	7,913	0·2	—
	1945	**2**	**6,831**	**0·3**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**2**	**6,831**	**0·3**	**—**
Others	1950	3	1,768	—	—	—	—	—	—	—	—	—	—	3	1,768	—	—
	1945	**7**	**23,391**	**0·9**	**—**	**2**	**15,266**	**2·2**	**—**	**—**	**—**	**—**	**—**	**9**	**38,657**	**1·2**	**—**
	1950	189	3,015,803		64	46	761,890		15	3	43,212		1	238	3,820,905		80
Total	**1945**	**172**	**2,596,102**		**66**	**39**	**678,346**		**15**	**3**	**39,797**		**1**	**214**	**3,314,245**		**82**
Electorate and	1950		3,550,991	84·9			877,167	86·9			50,351	85·8			4,478,509	85·3	
Participation ...	**1945**		**3,446,960**	**75·3**			**886,275**	**76·6**			**51,136**	**77·8**			**4,384,371**	**75·6**	

C : Candidates.

the redistribution of 1948, which replaced the electoral structure of 1918 by the present one and, incidentally, deprived the Labour Party of six seats, and of the abolition of the business premises franchise, which seems to have cost the Conservatives at least one seat.

(2) General Survey.

At the general election of 1950 the Labour, Conservative,[1] and Liberal parties polled 46·1%, 43·4%, and 9·1% of the votes cast in the whole country, the remaining 1·4% going to the minor contestants. As can be seen from Table I, the proportions in the North-West were 44·9%, 46·2%, and 8·6%, respectively. In 1945 the corresponding national proportions had been 48·5%, 39·9%, 9·0%, and 2·6%, while the regional ones had been 47·5%, 41·9%, 9·1%, and 1·2%. Thus the swing, here defined as the change in the Labour share of the votes cast for the two major parties,[2] was 3·4% in the country as a whole but 4·9% in the region. These differences between the party strengths and fortunes in the country and in the region show the extent to which the region is more Conservative than the country as a whole. The position in the North-West may be contrasted also with Yorkshire, which has been chosen rather than the whole North-East because Yorkshire resembles the North-West in containing no great district formerly so heavily depressed as Durham and Tyneside, the other constituent of the North-East. In 1945, Labour obtained 54·5% of the Yorkshire poll, the Conservative 34·6%, and the Liberals 10·2%; in 1950, the shares were 52·1%, 38·7%, and 8·9% respectively. Thus Labour retains an absolute majority of votes to the east of the Pennines, while west of them the party has lost even the plurality it obtained in 1945.

[1]Throughout this paper the term "Conservative" includes also the allies of the Conservative and Unionist Party—the Liberal Nationals (National Liberals since June, 1948) and Nationals standing with Conservative support. In 1950 the Conservative Association in the Chorley division of Lancashire supported a candidate who was not recognized by the Standing Advisory Committee at the party's national headquarters; here he is counted as a Conservative.

[2]See R. B. McCallum and A. Readman: *The British General Election of* 1945, Appendix III by D. E. Butler.

In terms of seats, in 1945, 62·6% (393) of the 628 M.P.s sitting for territorial constituencies were Labour, and 33·3% (209) were Conservative, the rest being members of the other parties or independents ; for the region (all the seats for which had been won by the two major parties) the proportions were 67·5% (56 M.P.s) and 32·5% (27 M.P.s).[1] After the 1950 election, Labour's share was reduced, both in the whole Parliament and in the regional contingent. Yet while Labour's plurality of votes in the nation yielded it a majority of seats, the Conservatives' plurality of votes in the region failed to give them a similar advantage, and they won only 38 of the 80 seats. This is, of course, an accidental result of the single-member constituency system, like the result of the L.C.C. elections in 1949, when the Conservatives obtained an absolute majority of votes, but tied with Labour in terms of seats.

It may be noted in passing that the widely-held belief that the Conservatives' defeat in 1945 was the heaviest they have suffered since 1906, is true only in terms of seats. In both 1923 and 1929 they obtained less support in terms of the percentage of votes cast than in 1945, but in those years the existence of a three-party system reduced the disproportion between votes and seats. The nadir of Conservative strength was in the former year, when the party polled only 37·8% of the national vote and 39·5% of the regional. It will be observed that then also the region was to the right of the rest of the country. Of course, the greater Conservatism of the North-West has been a feature of English politics since the enfranchisement of the urban artisan householder in 1867 ; only in the few years of Liberal supremacy just before the first World War did this rule not hold good.

Within the region the parties' fortunes varied. The Conservatives gained an absolute majority (50·6%) of the votes

[1]These figures include the unopposed returns of one Unionist and two Labour members in 1945, and of two Unionists in 1950. In 1945 one of the constituencies with an unopposed return was in the North-West : the Scotland division of Liverpool, which was held by Labour. This constituency is included in the later statistics of constituency sizes and regional representation, but not in the other statistics. In 1950 all the seats in the region were contested, the two unopposed returns being in Northern Ireland.

cast in Cheshire, where in 1945 they had had only a plurality (46·3%) over Labour ; they gained 12 of the 15 seats, one more than in 1945. In Lancashire, the Labour plurality was reduced from 49·9% in 1945 to 46·9% in 1950 ; 39 of the party's 64 candidates were elected, as compared with 51 out of 66 in the contested constituencies in 1945. In both elections the Conservatives fared better in Cheshire than in Lancashire by five or six points, a difference which was normal throughout the inter-war period. In the High Peak the positions of the parties have hardly varied in these two elections ; the Conservatives have not regained the absolute majority which they usually had before 1945. The Liberal share of the votes fell slightly in Cheshire and Lancashire, and rose slightly in the High Peak ; as will be shown later, this apparent stability masked a real decline in Liberal strength, the party having nominated many more candidates in 1950 than in 1945.

The Communists also suffered heavily. As in the whole Kingdom, so in the region, with four times as many candidates their total poll declined—in the country by one-tenth and in the region by one-sixth. Of their thirteen candidates in the North-West, the most successful (at Wigan) received only 1,243 votes, or 2·3% of the total cast in his constituency. All thirteen lost their deposits. So also did the three independents—the Irish Anti-Partitionist at Bootle, the Independent Socialist at Exchange, Liverpool, and the Independent Labour Party candidate at Burnley. In 1945, the independents fared much better, but mainly because three of the seven had served in the 1935-45 Parliament and had acquired a position in their constituencies ; these three had received five-sixths of all the votes then cast for independents in the region, but had been defeated nevertheless. In 1950 the fate of independents elsewhere was the same as that of those in the region.

(3) The Electoral Structure.

The North-West is now represented by 80 M.P.s—64 for Lancashire, 15 for Cheshire, and 1 for the High Peak ; in 1945 it had 83 M.P.s—67, 15, and 1 respectively. Yet although

there are now fewer members, the number of constituencies in the region has increased, for the five undivided double-member boroughs which existed in 1945 were abolished by the Representation of the People, Act, 1948, and replaced by single-member constituencies.

The main purpose of that Act was to re-draw constituency boundaries so that each M.P. should represent approximately the same number of electors, so as to eliminate the great inequalities of representation caused by the changes in the distribution of the population since the last drawing of boundaries in 1917-18 and only slightly alleviated by the partial redistribution of 1944-5.[1] The electoral quota which was to guide the Boundary Commissioners responsible for the new redistribution varied somewhat between the four parts of the United Kingdom, Scotland and Wales being slightly over-represented, England being slightly under-represented and Northern Ireland also being under-represented since it has its own Parliament for regional affairs. Moreover, in each part the quota for county constituencies was a little lower than that for borough constituencies, so as to allow for the greater dispersal of the rural population.

In this redistribution the North-West fared much the same as England as a whole. The regional average, as given by the first electoral registration made under the Act, was 55,981 electors per constituency, in comparison with the English average of 56,073. In the region the average size of a county constituency was 53,698 electors and of a borough constituency 57,081 ; the corresponding figures for England were 54,386 and 57,319.[2]

There are, of course, substantial inequalities in the sizes of electorates, not only in Wales and Scotland, with their large sparsely-populated highlands, but even in England.

[1]The House of Commons (Redisbribution of Seats) Act, 1944, provided for dividing twenty of the largest constituencies into forty-five smaller ones. In the North-West, Blackpool was divided into Blackpool North and Blackpool South, and Altrincham into Altrincham and Bucklow. Of these four constituencies only three survive the changes of 1948, Bucklow having been abolished as a result of the general redrawing of boundaries in Cheshire.

[2]See Cmd. 7840 and 7841 : *Parliamentary Constituencies* (*Electors*).

Within itself, however, the region has a more equitable distribution of seats than the whole country, as is shown in Table II. The variations are due largely to Parliament's desire that local government areas should not be divided where this could be avoided by a reasonably small deviation from the quota ; it will be seen that the limits of tolerance are fairly wide.

TABLE II
SIZES OF CONSTITUENCIES IN 1950

Number of Electors	Borough Constituences		County Constituencies	
	All England	North-West	All England	North-West
35—40,000 ...	1·0	—	1·4	—
40—45,000 ...	6·8	3·7	11·2	11·5
45—50,000 ...	14·8	14·8	17·6	11·5
50—55,000 ...	18·9	22·2	23·3	27·0
55—60,000 ...	23·7	24·0	20·5	34·5
60—65,000 ...	15·1	24·0	18·1	15·5
65—70,000 ...	9·6	5·5	6·5	—
70—75,000 ...	7·6	5·5	1·4	—
75—80,000 ...	2·5	—	—	—
TOTAL ...	100	100	100	100

The extremes are as follows. Of borough constituencies the largest and smallest in England have electorates of 79,087 (Dartmouth) and 38,776 (Gateshead West) respectively ; for the North-West the corresponding figures are 73,640 (St. Helens) and 41,062 (Blackburn West). Of English county constituencies the largest has 70,687 (Barnet) and the smallest 39,622 (South-West Norfolk) ; their counterparts in the region have 62,688 (Crewe) and 41,161 (Darwen).

On the whole, therefore, it may be said that in its electoral structure the North-West does not differ greatly from England as a whole. There is, however, a striking difference between the electoral structure of the region in 1950 and in 1945. The 1948 Act radically altered the distribution of seats in the region, as in the rest of the country. Only three constituencies remained unaltered—Nelson and Colne, Southport, and Wigan —although a number of others underwent only slight changes. (In all England 51 constituencies remained unaltered, so that the North-West was changed more than the rest of the country ; for the whole Kingdom the figure is 80).

In 1945 the largest borough constituency returning a single member had 99,375 electors (Manchester, Withington) ;[1] the smallest borough constituency had 21,325 electors (Liverpool, Scotland). For the county constituencies the corresponding figures are 109,762 (Wirral) and 35,173 (Eddisbury). The full distribution is given in Table III ; in Table II percentages were used because of the great difference between the numbers of constituencies in England and in the region, but in this table the actual numbers are given because the 1950 and 1945 regional totals vary only slightly—80 and 83 constituencies respectively.

(4) Popular Participation.

The voting in this general election was the heaviest that has been recorded in the United Kingdom for forty years.[2] 84·0% of the registered electors voted, as compared with 74·5% in 1945. This heavy poll has been attributed to an

[1]The largest constituency was Bolton, with 120,355 electors, but it was an undivided borough returning two members. The electorates of the other double-member constituencies were as follows : Blackburn 82,450, Oldham 88,989, Preston 88,378, and Stockport 99,698. In Table III they have been counted as ten single-member constituencies.

[2]At the general election of January, 1910, the number of votes cast equalled 85·6% of the number of registered electors in the contested constituencies. Nevertheless, the degree of popular participation in 1950 was probably greater than in 1910, because before 1918 the registration process placed more onus on the subject, so that the most apathetic citizens were not registered. The relation of votes to voters was, of course, affected also by the existence of unrestricted plural registration and voting by holders of business premises.

TABLE III

SIZES OF CONSTITUENCIES IN THE NORTH-WEST, 1945 & 1950

Electorate	Borough Constituencies		County Constituencies	
	1945	1950	1945	1950
20—25,000 ...	2	—	—	—
25—30,000 ...	2	—	—	—
30—35,000 ...	8	—	—	—
35—40,000 ...	3	—	2	—
40—45,000 ...	11	2	3	3
45—50,000 ...	8	8	2	3
50—55,000 ...	3	12	4	7
55—60,000 ...	7	13	3	9
60—65,000 ...	5	13	4	4
65—70,000 ...	3	3	2	—
70—75,000 ...	1	3	1	—
75—80,000 ...	1	—	2	—
80—85,000 ...	—	—	1	—
85—90,000 ...	1	—	1	—
90—95,000 ...	—	—	2	—
Over 95,000...	—	—	1	—
TOTAL ...	55	54	28	26

improvement in the condition of the register, to an increase in the public's appreciation of political issues, and (perhaps more important) to the extensive efforts of the party machines, which devoted much energy to "getting out the vote." It must be remembered, however, that participation in 1945 was lower than at any election since that of 1923. In the North-West participation has always been higher than in the country

as a whole, and this is still so : in 1945 it was 75·6%, and in 1950, 85·3%. More detailed information is given in Table IV, which shows the number of constituencies where the participation was within certain percentage ranges.

TABLE IV

ELECTORAL PARTICIPATION IN THE NORTH-WEST, 1945 and 1950

Percentage of Electors Voting	Number of Constituencies	
	1945	1950
60 — 64	5	—
65 — 69	6	—
70 — 74	23	—
75 — 79	29	6
80 — 84	14	23
85 — 89	—	47
90 — 94	—	4
TOTAL	77	80

What are the causes of these substantial variations? It has been claimed that electoral participation tends to increase with the closeness of the contest and with the number of candidates contesting the constituency,[1] but the figures for February, 1950 do not appear to support these claims.

In Table V constituencies have been grouped into five classes, according to the proportion which the votes cast for the winning candidate bore to the total cast for him and his nearest rival ; in each class the sum of the electorates and the sum of the polls in the several constituencies have been used to derive a participation percentage for that class. Although participation tends to decrease as the winner's proportion

[1]See Gosnell, H. F., *How Europe Votes* and Tingsten H., *Political Behaviour*.

increases (that is, as the contest becomes less close), the changes are hardly significant, and, indeed, the three constituencies forming the last class show an increase in participation.

TABLE V

PARTICIPATION AND CLOSENESS OF CONTEST IN THE NORTH-WEST, 1950

Winner's Share of Votes Cast for First Two Candidates	Number of Constituencies	Per Cent. Participation
50 — 55%	30	85·94
55 — 60%	22	85·40
60 — 65%	12	85·14
65 — 70%	13	83·95
70 — 75%	3	85·51
Regional Total	80	85·32

It is to be expected that the intervention of candidates of third and fourth parties would cause an increase in participation, as they might attract electors unwilling to vote for either of the major parties. That the North-West offered in 1950 no evidence to support this view can be seen from Table VI, which has been constructed in a manner similar to that of Table V.

TABLE VI

PARTICIPATION AND THE INTERVENTION OF THIRD PARTY CANDIDATES IN THE NORTH-WEST, 1950

Candidates	Number of Constituencies	Per Cent. Participation
Labour and Conservative	13	85·77
Labour, Conservative, and Liberal...	62	85·53
Labour, Conservative, and others	5	81·32
Regional Total	80	85·32

It seems that the extent of popular participation is dependent not on the intervention of third and fourth contestants, which is to some extent adventitious, nor on the closeness of the contest, but on a more fundamental factor—the social character of the constituency. The four constituencies with polls of 90% or more are in the weaving area of Eastern Lancashire, and that area taken as a whole had a higher degree of participation than any other of the eight areas into which the region may be divided—namely, Barrow-in-Furness, an industrial area ; North-West Lancashire, rural, with holiday and residential resorts ; the weaving area ; the spinning area to the south ; the coal-chemical area to the south-west ; the Manchester and Merseyside areas, and Southern Cheshire, largely rural and residential.[1]

If these eight areas are arranged in order of their degrees of participation in each of the nine elections since 1918, the record is seen to be remarkably constant. Participation has tended to be greatest in the weaving area, which heads the list six times. Then in descending order come Barrow-in-Furness, the coal-chemical area, the spinning area, Southern Cheshire, North-West Lancashire, the Manchester area, and Merseyside, which has had the lowest participation in every election. It is worth noting that the Manchester area provides striking evidence against the view that the uncertainty of the result tends to increase participation, for of all the areas in the region it is this one which has seen the greatest changes. In each of the four elections from 1923 to 1931, between ten and fourteen of the area's twenty-two seats changed hands; in 1935 five seats did so, and in 1945 twelve. Yet participation has remained low : in the inter-war years it was always at least five points below that of the coal-chemical area, of which most of the seats were safely Labour, and it was also always below that of North-West Lancashire and of Southern Cheshire, two

[1]These are the areas distinguished in the Manchester University Economics Research Section's *Re-adjustment in Lancashire* (1936). That publication gave the name "Fylde District to what is here called "North-West Lancashire" because two of the constituencies within the area are North and South Fylde. The constituencies in each area are named in the note to Table IX.

strongly Conservative areas. This general pattern of participation, subject only to very slight modifications, can be traced throughout the whole period since the establishment of household suffrage in the towns in 1867, and seems to have been unaffected by the extensions of the suffrage in 1884 and 1918. In the period between the Reform Acts of 1832 and 1867 there were so many unopposed returns that it is impossible to assess satisfactory participation records for that period.

It may be concluded that figures of participation are an index less of political interest than of each area's social character, of which the most important aspect seems to be the stability of the population of the towns in the area. In local elections there is a marked correlation between a high level of participation and a high degree of population stability, which indicates the extent to which the town's population is indigenous and seems to be the best available measure of social cohesion.[1] Examination of the eight areas in the North-West shows that those with the highest participation have most towns of more stable population. That this relation should hold in local elections is not surprising ; that it is to be found also in general elections determining the government of the nation at large is a remarkable example of the extent of habit in political behaviour.

(5) How The Parties Fared.

It has already been remarked that the heavy poll was partly due to the increased efforts of the political parties. How have they been rewarded for their pains ? The Labour poll in the region rose by 140,029 votes, the Conservative by 377,334, and the Liberal by 25,194. In terms of the 1945 polls those increases are equal to 8·9%, 27·2%, and 8·3%, respectively. In the whole Kingdom the corresponding increases were 8·4%, 25·1%, and 16·8%. It must be remembered that the increases in the Liberal poll were due to the fact that throughout Great Britain the party had three candidates in 1950 for every two in 1945. The support that

[1]See A. H. Birch, "The Habit of Voting," *Manchester School*, January, 1950.

each candidate received was thus much less in 1950 than in 1945, as is indicated in Table VII.

TABLE VII

SUPPORT RECEIVED BY LIBERAL CANDIDATES

Support	Number of Constituencies	
	1945	1950
Over 30%	1	—
25 — 30%	2	—
20 — 25%	4	—
15 — 20%	14	11
10 — 15%	12	24
5 — 10%	5	19
Under 5%	—	8

In 1950 two-thirds of the Liberal candidates in the region forfeited their deposits, as compared with one-third in 1945 ; the national proportions are the same as the regional for both years.

Although they fared so badly, the Liberals held the balance of power in a large number of constituencies. At the recent election 28 of the region's M.P.s were elected on a minority vote, 14 of them Labour and 14 Conservative. Of the national total of 625 M.P.s 187 were elected on a minority vote, 76 Labour, 106 Conservative, and 5 Liberal. Yet although the Liberal candidates have had this effect, it is doubtful whether they have influenced appreciably the distribution of seats between the two major parties. In most of the cases of minority representation almost all the Liberal votes would have had to go to the defeated major-party candidate for him to have ousted the winner, and it is improbable that the Liberal electors would have given their support in that way. A British Institute of Public Opinion poll taken before the

election [1] indicated that in the absence of a Liberal candidate, two-fifths of the Liberal supporters would have abstained, two-fifths voted Conservative and one-fifth Labour. If Liberal candidates had not stood in those constituencies which the Liberals did not gain, and if their supporters had behaved in this manner, then the Conservatives would have gained only three seats in the North-West (the Blackley division of Manchester, Oldham East, and Chorley) and 12 in the whole country. On the other hand, if two-fifths of the Liberals had abstained, only one-fifth voted Conservative, the rest voted Labour, then Labour would have gained only Bury and Radcliffe in the North-West, although 18 other seats would have been won elsewhere in the country, and the party's representation in Parliament would then have risen to 334, a majority of 43 over all other parties.

That 28 of the region's M.P.s were returned with the support of a minority of votes does not indicate the full extent of minority representation, which is increased by the fact that the absence of a 100% poll means that many M.P.s who gain an absolute majority of the votes cast nevertheless fail to gain the support of a majority of the registered electors.[2] Of the region's representatives, 35 Labour M.P.s and 30 Conservative have been elected in this way : a total of 65. This is indicated in Table VIII.

It must be stressed that the introduction of both compulsory voting and the alternative vote might not affect the distribution of seats between the two major parties. The analysis of the Liberal votes has shown that the results would probably not have been much influenced by the transfer of Liberal support to the other parties, and it is possible that if there had been a 100% poll, the extra voters would have

[1] Lord Layton : "What the polls show," *News Chronicle*, 25th January, 1950.

[2] A 100% poll is an ideal which is certainly unobtainable in this country, where the electorate is determined by a register compiled several months before it comes into force, and where the elector has to vote in the constituency in which he is registered. The Act of 1948 extended the facilities for posital and proxy voting, but the procedure for using them naturally places considerable onus on the elector concerned.

TABLE VIII
MINORITY AND MAJORITY REPRESENTATION, 1950

Proportion of Support	Number of M.P.s returned with support of—	
	Actual Voters	Registered Electors
Under 40%	—	14
40 — 45%	5	29
45 — 50%	23	22
50 — 55%	20	10
55 — 60%	19	4
Over 60%	13	1

supported the rival parties in such ways as not to affect the results—they might have voted in the same way as the actual voters, or given more support to the winners, or at least not have given the losers enough support to carry them to victory.

"Safe" Seats.

To return to the two major parties : from Table VIII it will have been noted that a number of M.P.s have been elected by large majorities. How many of those majorities are large enough for it to be said that the M.P.s in question hold "safe" seats? To answer this question, it is necessary to find a criterion of "safeness." This criterion must be equally applicable to all constituencies, regardless of their size and degree of participation ; it must therefore be a percentage and not an absolute number of votes, for a majority of 5,000 votes (for example) will be more important in a constituency of 40,000 electors than in one of 75,000. Moreover, the criterion must be adaptable to constituencies contested by third and fourth parties, so that account may be taken of the probable effects of the withdrawal of those parties.[1]

[1]For a different view of "safeness" see Mrs. M. I. Cole, "The General Election, 1950," in *Fabian Journal*, May, 1950, and also her pamphlet, *The General Election of* 1945, *and after*, Fabian Research Series, 102.

Certain assumptions have to be made. If it is assumed that 1945 represented the left-ward extreme of the swing of the electoral pendulum and 1950 the centre, then the maximum swing will be 4·94 points from the position in 1950 in constituencies in which there was a straight fight in that year. For constituencies with a Liberal candidate an adjustment has to be made to allow for the possible absence of such a candidate at a future election; it has been suggested in the earlier consideration of the Liberal vote that Liberal strength is probably negligible in those constituencies which the party did not fight in 1950 and that therefore the intervention of a Liberal candidate would hardly have affected the positions of the two major parties. There it was further shown that the maximum advantage either party can reasonably hope to gain from a Liberal withdrawal is a net gain of one-fifth of the Liberal poll. Now in the constituencies which the Liberals contested, they gained 10·96% of the votes; one-fifth of this share is 2·19%, so that in those constituencies the maximum swing will be not 4·94% but 7·13%. In other words, a seat with a straight fight in 1950 may be counted "safe" for its holder if he obtained 54·94% of the votes, while a seat with a Liberal candidate is safe only if the holder received 57·3% of the votes cast for the two leading candidates. The total range of the swing is thus 9·88 points in constituencies with a straight fight in 1950 and 14·26 points in constituencies contested by the Liberals; this may be compared with the swing in the North-West of 11 or 12 points between 1935, which may be considered the limit of normal Conservative success, and 1945 the probable limit of Labour success.[1] The polls of the Communists and the other minor contestants were so small and their disposition in the absence of the respective candidates so uncertain that it seems best to ignore them, and this can be done the more readily since those candidates fought seats which are either undeniably safe or undeniably marginal.

By the use of this method a total of 39 safe seats is obtained —17 Labour and 22 Conservative. They are distributed thus :

[1]See R. B. McCallum and A. Readman : *The British General Election of* 1945, p. 264.

Labour holds Barrow-in-Furness, one of the eight seats for the weaving area,[1] three of the fourteen seats for the spinning area,[2] five of the six seats for the coal-chemical area,[3] five of the twenty-one seats for the Manchester area,[4] and two of the seventeen for Merseyside.[5] The Conservatives hold five of the six seats for North-West Lancashire,[6] one seat in the weaving area,[7] one in the spinning area,[8] four in the Manchester area,[9] seven in Merseyside,[10] and four of the six seats for Southern Cheshire.[11]

Distribution of the parties' support.

The positions of these safe constituencies naturally indicate where lie the main sources of each party's strength. From Table IX, which gives the electoral statistics of the eight areas within the region, it can be seen that except for Barrow-in-Furness (a single constituency ranked as an area only because its economic and social character differs so greatly from that of the neighbouring district), Labour is strongest in the coal-chemical area with 59·7% of the votes, in the weaving area with 48·5%, and in the spinning area with 48%. The Conservatives are strongest in North-West Lancashire with 60·7%, in Southern Cheshire with 51·5%, and in Merseyside with 50·2%. In the first of these three areas the Conservatives have a large majority of votes, and although in the other two they failed to gain an absolute majority in 1945, even then they retained a plurality over Labour.

This distribution of the parties' support can be traced back to the inter-war years. Except in 1931 Labour always

[1]Burnley.
[2]Leigh, Farnworth, and Westhoughton.
[3]St. Helens, Wigan, Warrington, Ince and Newton.
[4]Cheetham, Clayton, Exchange, and Gorton in Manchester, and Salford East.
[5]The Exchange and Scotland divisions in Liverpool.
[6]Blackpool North and South, North and South Fylde, and Morecambe and Lonsdale.
[7]Darwen.
[8]Middleton and Prestwich.
[9]Altrincham and Sale, Cheadle, and the Moss Side and Withington divisions of Manchester.
[10]Crosby, the Garston and Wavertree divisions in Liverpool, Southport, Wallasey, Ormskirk, and Wirrall.
[11]Chester, Knutsford, Macclesfield, and Runcorn.

TABLE IX

VOTING IN ECONOMIC DIVISIONS, 1945 and 1950

				Labour	Con-servative	Liberal	Comm.	Other
BARROW-IN-FURNESS								
1950	Electorate	53,300	Votes	26,342	16,793	3,678		
1945		49,669		25,939	13,648			
1950	Total Votes	46,813	Percent of Votes	58·4	35·9	5·7		
1945		39,587		65·5	34·5			
1950	Participation (Per Cent)	87·8	Candidates	1	1	1		
1945		79·7		1	1			
1950			M.P.s	1				
1945				1				
NORTH-WEST LANCASHIRE								
1950	Electorate	322,442	Votes	79,463	162,090	25,467		
1945		345,336		79,989	137,112	29,168		3,419
1950	Total Votes	267,020	Percent of	29·7	60·7	9·6		
1945		249,688	Votes	32·0	54·9	11·7		1·4
1950	Participation (Per Cent)	82·8	Candidates	6	6	6		
1945		72·1		5	5	3		2
1950			M.P.s		6			
1945					5			
WEAVING AREA								
1950	Electorate	389,794	Votes	169,557	155,965	23,324	526	295
1945		376,876		160,482	118,837	29,355	1,663	
1950	Total Votes	349,667	Percent of Votes	48·5	44·5	6·7	0·1	0·1
1945		310,337		51·8	38·4	9·3	0·5	
1950	Participation (Per Cent)	89·7	Candidates	8	8	5	1	1
1945		82·4		8	8	8	1	
1950			M.P.s	5	3			
1945				7	1			

TABLE IX—*Continued*

				Labour	Con-servative	Liberal	Comm.	Other
SPINNING AREA								
1950	Electorate	810,158	Votes	338,199	293,462	72,720	804	
1945		791,862		314,012	243,427	61,836	5,168	
1950	Total Votes	705,185	Percent of Votes	48·0	41·6	10·3	0·1	
1945		624,443		50·3	39·0	9·9	0·8	
1950	Participation (Per Cent)	87·4	Candidates	14	14	11	2	
1945		78·8		15	15	8	1	
1950			M.P.s	10	4			
1945				12	3			
COAL-CHEMICAL AREA								
1950	Electorate	395,086	Votes	205,508	127,619	8,718	2,126	
1945		369,500		184,211	100,184			
1950	Total Votes	343,971	Percent of Votes	59·7	37·2	2·5	0·6	
1945		284,395		64·8	35·2			
1950	Participation (Per Cent)	87·1	Candidates	7	7	4	3	
1945		77·0		6	6			
1950			M.P.s	7				
1945				6				
MANCHESTER AREA								
1950	Electorate	1,173,827	Votes	448,468	448,458	97,031	2,871	
1945		1,087,052		405,622	324,658	78,790		5,328
1950	Total Votes	996,828	Percent of Votes	45·0	45·0	9·7	0·3	
1945		814,398		49·8	39·9	9·7		0·6
1950	Participation (Per Cent)	84·9	Candidates	21	21	19	5	
1945		74·9		22	22	12		3
1950			M.P.s	12	9			
1945				17	5			

TABLE IX—*Continued*

				Labour	Con-servative	Liberal	Comm.	Other
MERSEYSIDE								
1950	Electorate	996,520	Votes	338,237	410,310	65,656	1,586	1,473
1945		**940,572**		**279,503**	**291,549**	**67,862**		**29,282**
1950	Total Votes	817,262	Percent of Votes	41·4	50·2	8·0	0·2	0·2
1945		**668,196**		**41·8**	**43·6**	**10·2**		**4·4**
1950	Participation (Per Cent)	82·0	Candidates	17	17	12	2	2
1945		**70·9**		**18**	**18**	**9**		**3**
1950			M.P.s	6	11			
1945				**11**	**7**			
SOUTHERN CHESHIRE								
1950	Electorate	337,382	Votes	110,944	151,792	31,423		
1945		**422,504**		**126,931**	**159,740**	**35,902**		**628**
1950	Total Votes	294,159	Percent of Votes	37·7	51·5	10·8		
1945		**323,201**		**39·3**	**49·4**	**11·1**		**0·2**
1950	Participation (Per Cent)	87·2	Candidates	6	6	5		
1945		**76·5**		**7**	**7**	**5**		
1950			M.P.s	1	5			
1945				**1**	**6**			

Notes to Table IX overleaf.

NOTE TO TABLE IX

The areas are composed as follows :—

BARROW-IN-FURNESS : in 1950 and 1945, the Parliamentary borough of that name.

N.W. LANCASHIRE : in 1950, Morecambe and Lonsdale, Lancaster, North and South Fylde, and North and South Blackpool ; in 1945 Lonsdale, Lancaster, Fylde and the two Blackpools.

WEAVING AREA : in 1950 and 1945, Clitheroe, Burnley, Accrington and Blackburn (2), Nelson and Colne, Rossendale, and Darwen.

SPINNING AREA : in 1950, North and South Preston, Chorley, Westhoughton, East and West Bolton, Leigh, Farnworth, Bury and Ratcliffe, Heywood and Royton, Rochdale, Middleton and Prestwich, East and West Oldham ; in 1945 Preston (2), Chorley, Westhoughton, Bolton (2), Leigh, Farnworth, Bury, Heywood and Radcliffe, Royton, Rochdale, Middleton and Prestwich, Oldham (2).

COAL-CHEMICAL AREA : in 1950, Wigan, Ince, St. Helens, Huyton, Widnes, Newton, Warrington ; in 1945 Huyton was part of Widnes.

MANCHESTER AREA : in 1950, Eccles, East and West Salford, Stretford, Manchester (9), Droylsden, Ashton-u-Lyne, Stalybridge and Hyde, High Peak, Cheadle, North and South Stockport, Altrincham and Sale ; in 1945, Eccles, North South and West Salford, Stretford, Manchester (10), Mossley, Ashton-u-Lyne, Stalybridge and Hyde, High Peak, Stockport (2), Altrincham and Sale.

MERSEYSIDE : in 1950, Southport, Ormskirk, Crosby, Bootle, Liverpool (9), Wallasey, Birkenhead, Bebington, Wirral ; in 1945, Southport, Ormskirk, Waterloo, Bootle, Liverpool (10) (excluding Scotland division—Labour unopposed), Wallasey, East and West Birkenhead, Wirral.

SOUTHERN CHESHIRE : in 1950, Runcorn, Chester, Northwich, Crewe, Knutsford, Macclesfield ; in 1945, Bucklow, Chester, Eddisbury, Northwich, Crewe, Knutsford, Macclesfield.

won at least four of the six seats in the coal-chemical area, and except in 1918 and 1931 the party obtained at least 55% of the votes cast there. In the weaving area it obtained a majority of the seats only in 1929, but in four of the seven elections it received more votes than either of the other parties. In the spinning area it fared slightly less favourably. In both these areas the party was still struggling in the 1920's with the Liberal Party for the anti-Conservative vote ; that battle had already been won in the coal-chemical area.

The Conservatives, on the other hand, were strongly entrenched in North-West Lancashire, Southern Cheshire, and Merseyside. Except in 1923 and 1929 they held at least twenty-four of these areas' total of twenty-nine seats ; in those two years their share fell to 16 and 18 respectively. Except in North-West Lancashire in 1923 they were always the strongest party in each of these areas, and they failed to obtain an absolute majority of votes only in 1923 and 1929. Thus their gains in Merseyside and Southern Cheshire in February, 1950, restored them to their habitual complete supremacy which they had lost in 1945. Even in that year, though their general fate was as bad as in 1923, they did not lose their hold on North-West Lancashire, which the Liberals had wrested from them in that earlier year.

The marginal areas in these years were Barrow-in-Furness and the Manchester district. The Conservatives held the former in all the elections, except those of 1924 and 1929. In the Manchester area they had a majority of votes in four of the elections, and remained the strongest party in two others, losing that position only in 1929 when they were beaten by Labour. Mention has already been made of the great turn-over of seats in this area

Political consequences of redistribution.

The positions of the parties have, of course, been affected by the general redistribution of seats in 1949. Throughout the inter-war years the constituency boundaries of 1918 were retained ; the changes in 1945 increased the number of the region's representatives from 81 to 83 and, incidentally, gave

the Conservatives two extra seats in the Blackpool and Altrincham divisions. To these gains more have been added as a result of the changes of 1948. The party has gained one seat in North-West Lancashire by the division of Fylde into two constituencies, and another in the Manchester area by the creation of Cheadle out of the Conservative area of Southern Cheshire, but in that area it has lost one seat by the abolition of Eddisbury. By the division of the old double-member constituencies it has gained two more seats—one in Blackburn, where it is in a minority in the whole city, and the other in Preston, where its majority in the two new constituencies seems due to the addition of the Conservative urban district of Walton-le-Dale to the city of Preston and the urban district of Fulwood which alone had comprised the old constituency. Of the former double-member constituencies outside the North-West the only other city in which the Conservatives gained by the division was Norwich.

The Labour Party, on the other hand, has incurred a gross loss of seven seats by the abolition of Royton in the spinning area, and by the division of Manchester into nine constituencies instead of ten, of Salford into two instead of three, of Liverpool into nine instead of eleven, and of Blackburn and Preston. This loss has been partially redressed, since the division of Widnes into two constituencies has given the party an extra seat.

Thus in the North-West the total effect of the general redistribution of 1948 has been a Conservative gain of three seats and a Labour loss of six, the differences being due to the reduction of the number of members representing the region. If account is taken of the partial reform of 1945, then in comparison with the pre-war distribution the Conservatives have gained another two seats, making a total of five.

Mention may be made here of one of the other changes of 1948—the abolition of the business premises franchise, long regarded as favouring only the Conservatives. In the North-West the only constituencies where the holders of that franchise would have been numerous were the Exchange divisions of Liverpool and Manchester, which were both won by Labour

with majorities greater than the probable business premises electorates there. However, if this franchise had not been abolished, it is probable that the Conservatives would have gained the Blackley division of Manchester, where the Labour majority was only 42, and it is just possible that they would also have won in Preston South, where the Labour majority was 149. These seem the only seats they have lost through the change, either in the North-West or elsewhere.

(6) Conclusion.

The results of this study have been summarized in the Introduction, and need not be repeated here. Instead, it may be appropriate to draw attention to certain problems of method in election studies.

The most comprehensive work of this kind is that of M. André Siegfried, whose *Tableau Politique de la France de l'Ouest* (1913) analyses in detail the voting in a large area of France, the local variations of economic activity and social structure being correlated with variations in participation and political allegiance. This brilliant work has influenced subsequent thought on this topic and there have been similar studies on a smaller scale in several countries.

As yet, however, electoral behaviour in this country has not been analysed in this manner, for British political scientists have suffered from the deficiencies of the electoral statistics here. Among these deficiencies, five have been most important. First, most parliamentary constituencies are arbitrary units, of which the boundaries do not coincide with those of the localities for which social and economic statistics are published by the Registrar-General in his annual returns or census reports. Second, each redistribution results in the majority of the new constituencies having boundaries differing greatly from those of the old ones. Third, while in some countries the votes cast in each constituency are counted by wards or similar small units, in Britain they are counted at a single centre, and are shuffled before being counted; so that it may not be known how the electors in a given street or ward voted. Fourth, it is only in recent years that the national political

parties have intervened in local elections on a large scale, and even now there are very many areas where local elections are fought on local issues by local organizations which cannot safely be classed with any of the national parties ; as a result, the third deficiency cannot always be supplied by turning to the results of local government elections for adequate information about the political allegiance of the various areas within a parliamentary constituency. Fifth, although in the two recent elections almost every British constituency has been contested in only two of the inter-war elections did the number of uncontested seats fall below fifty ; moreover, even between 1945 and 1950 there were great variations between the extent and nature of the intervention of the Liberals and the minor contestants ; therefore, there arises the problem of the effect in the constituencies of the withdrawal or intervention of "third-" or "fourth-" party candidates.

These deficiencies can be remedied to some extent. Thus the first difficulty can be partly obviated by grouping constituencies so that each group coincides with the areas for which social and economic data are available, or by other adjustments. The second also can be alleviated by grouping constituencies, so as to obtain co-terminous areas, for which the results of elections before and after the redistribution can be compared at local levels below that of the county, which some commentators have alleged to be the only level at which such comparisons can be made. The third and fourth difficulties (and, in its own way, the first as well) can be overcome by local public opinion polls and social surveys. The same is true of the fifth difficulty, which can be dealt with also by statistical methods, such as the simple projecting of past voting trends, or more complicated methods of partial correlation, based on the study of areas similar in social character and political record.

Nevertheless, the difficulties caused by the deficiencies of British statistics cannot be wholly overcome, and it may, therefore, be necessary for studies of voting here to develop differently from those elsewhere. It may be that instead of

being attempts to obtain at the national level precise correlations between voting, on the one hand, and certain social and economic factors, on the other hand, studies here will have to be devoted to the electoral behaviour of specific communities. That is to say, they will have to pass earlier than their foreign counterparts from statistical methods to case-study. In that way they will be returning to the methods of M. Siegfried's great enquiry.

P. W. CAMPBELL.
A. H. BIRCH.

Manchester,
June, 1950.

Road Freight Transport and the Act of 1947

The natural development of the transport of freight by road has been very strongly influenced by two Acts of Parliament, passed in 1933 and in 1947. The main purpose of this article is to consider how the latter Act is working out, but it is first necessary to set the stage by recalling briefly the principal provisions of the former.

I. The Road and Rail Traffic Act, 1933.

The Road and Rail Traffic Act, 1933, split the industry into two main categories : (1) vehicles which carry goods wholly or partly for hire or reward ("A" and "B" licences), and (2) vehicles which carry goods solely "for or in connection with" a trade or business ("C" licences). These categories will be called "for-hire" and "private" transport respectively. "A" vehicles are engaged *solely* on for-hire transport, and "C" *solely* on private transport. The "B" licence combines both for-hire and private transport ; it also covers vehicles engaged solely on for-hire transport but restricted to limited operating conditions.

The conditions of issue of the various licences are completely different. "C" licences are issued without restriction, the only purpose being to ensure that the vehicle is not used on for-hire transport. Stringent restrictions apply to the granting of "A" and "B" licences, more as the result of the working of the administrative system than from any specific instructions given by Parliament. Parliament set down the main principle to govern the issue of licences in these words :

> "The licensing authority shall have regard primarily to the interests of the public generally, including those of persons requiring, as well as those of persons providing, facilities for transport."

He has also to take into consideration objections made by existing carriers.

The issue of "A" and "B" licences is now primarily determined by the interests of existing carriers, rail as well as road. Before a new licence is granted, or an extension or addition to an existing licence is permitted, the applicant must show, not only that there are traders wishing to employ him, but also that existing carriers cannot satisfy those needs. This lays a heavy burden on applicants. The railways, in particular, have devoted great attention to the licensing system, in order to restrict road transport in their own interests. Most applications encounter a railway objection, even where the rail interest appears remote. The court procedure provides them with much useful information on the activities of road operators.

Strict control of licences is not always unwelcome to the for-hire road carrier, for it brings advantages to those who "have crossed the bar." Road transport has no one single and simple ceremony of crossing the bar, for there are all sorts of degrees to which firms may have obtained adequate operational freedom. Those with restrictive licences tend to share the view of outsiders, that the licensing system is too restrictive and does not allow scope for new enterprise. The well-established, by reason of the wide terms of their licences (whether by number of vehicles or by extent of operations permitted), are generally satisfied with the system ; it provides them with welcome protection. Naturally, every shade of opinion exists between these extremes.

Well-established operators thus have interests closely aligned with those of the railways. Tending to take the lead in trade association affairs, they have been increasingly willing to meet the railways on the basis of "stabilisation" and "avoidance of competition."

Thus, for-hire road transport, which by its inherent nature possesses the greatest measure of flexibility, both in regard to day-to-day operations, location and overall volume (even in relation to quite short periods of time), has been greatly clamped down. Instead of ready ability to adjust itself to ever-changing demand, it has been forced by the licensing system to take on many of the railway characteristics,

particularly those relating to inflexibility and immobility. Expansion of for-hire transport has been substantially prevented and all growth diverted into private transport. This is shown in the following table.

	FOR-HIRE TRANSPORT			PRIVATE TRANSPORT		
	"A"	"B"	Total of "A" & "B"	"C"	"A contract"	Total of "C" & "A contract"
1936 Apr.	85,300	52,800	138,100	316,700	5,200	321,900
1937 Jun.	83,600	53,800	136,400	362,400	7,500	369,900
1938 Jun.	83,700	54,900	138,700	365,000	9,500	374,500
1945 Dec.	80,300	54,000	134,300	306,400	6,200	312,600
1946 Dec.	81,100	58,400	139,400	383,700	9,600	393,400
1947 Dec.	83,900	64,400	148,400	487,200	13,900	501,100
1948 Mar.	85,100	66,200	151,300	497,200	14,900	512,100
1948 Dec.	* 74,200	65,600	139,800	590,500	16,300	606,800

* The decline in "A" and "B" licence vehicles in Dec., 1948, would appear to be due to the removal from carriers' licences of vehicles acquired by the Road Executive. The B.T.C. Annual Report for 1948 shows 9,925 vehicles and trailers in the possession of the Road Executive at 31st Dec., 1948.
Source : Ministry of Transport : Annual Reports of Licensing Authorities for Goods Vehicles.

Over the same period technical progress was offering greater and greater advantages from road vehicles. This is demonstrated in the following figures of the costs of operating a 4-ton capacity lorry running 600 miles per week.[1] The figures shown include allowances for all standing and running charges, including interest and depreciation.

	Pence per mile	Percentage of 1922
1922	40·78	100
1926	8·77	81
1931	8·76	81
1934	7·27	67
1937 (petrol)	6·13	57
1948 (petrol)	7·71	72
1937 (diesel)	5·45	51
1948 (diesel)	7·41	69

[1]Extracted from typescript of lecture before Study Section of the Royal Statistical Society by K. F. Glover : "Gross Investment in Inland Transport." (1950).

Since 1933 much of this progress could only be utilised by trade and industry by developing private transport. This accounts for the growth of "C" licensed vehicles, and the expansion of "A contract" licences, which are economically a specialised form of private transport, comparatively free from economic control.

II. The Transport Act, 1947.

The Transport Act of 1947, nationalising part of inland transport, did not abolish the 1933 Act. It carved a new section of nationalised road transport out of the older system, which otherwise continues. It established the British Transport Commission, with various Executives covering different branches of inland transport. The term "Road Executive" will here be used to refer to the Executive dealing with road freight transport, as its title changed from Road Transport Executive to Road Haulage Executive.

The Road Executive was initially faced with the task of onstructing an entirely new organisation. By comparison, the railway task in nationalisation was simple ; there were only four railways to be fused ; large-scale enterprise was already the nature of railway organisation, and the hierarchy of officials already existed. In road transport, all had to be started from scratch. Premises had to be found, leading officials in the organisation individually appointed, staff gathered together, and the whole administration organised.

To make the quickest progress the Road Executive took the obvious course ; it sought to obtain control of the biggest existing undertakings in road haulage, and to use these as the nucleus on which to erect its area and operational organisation. Rather than risk delay through the formalities of compulsory acquisition, it opened negotiations on a voluntary basis with various large companies, particularly those with suitable premises in the key centres throughout the country. In this way, old-established firms of size were secured, including the Transport Services group, H. & G. Dutfield Ltd. and subsidiaries, Holdsworth & Hanson Ltd. and associated

companies, Fisher Renwick Ltd., and others. Whether firms acquired were strictly liable for acquisition under the terms of the Act was not always investigated, so long as the firm was willing to sell. Most of those acquired would subsequently have fallen under compulsory acquisition, but not all.

Prior to the Act, the largest organisation in road freight transport consisted of the Hays Wharf group, controlling many companies, including Carter Paterson & Co. Ltd. and Pickfords Ltd. There is a certain irony here. The Act directed that those firms predominantly engaged in "long distance carriage" in 1946 were to be acquired by the Road Executive. Long distance carriage may be paraphrased as the carriage of goods for more than 40 miles; but certain specialised traffics (indivisible loads, furniture, liquids in bulk, and others) were to be excluded, no matter how far carried. In the case of the Hays Wharf group, the application of this formula, whereby the large volume of specialised traffic carried would be calculated as short distance traffic, would almost certainly have meant that the amount of its long-distance carriage in 1946 would not have exceeded 50 per cent. of its total traffic; it would, therefore, have escaped nationalisation. Nevertheless, it happened that a controlling interest in the group's share capital had been held by the former railway companies, whose nationalisation caused these shares to pass to the Commission.

By the middle of 1948, the headquarters organisation began to take shape, the outline of the area organisation had been sketched, and the nuclear firms taken under control. As the Road Executive's organisation grew, it ceased to offer voluntary acquisition and fell back on to its statutory duty of acquiring compulsorily those firms whose activities fell within the formula of the Act in respect of long-distance carriage. By order of the Minister, it had to complete its issue of its notices for compulsory acquisition by December, 1949. Thereafter, one month was allowed during which any firm, which considered it had a right to claim acquisition by reason of the formula, could apply to the Road Executive.

The progress of acquisition is shown by these figures :

	Vehicles	Trailers
Acquisitions at 31 Dec., 1948...	8,208	1,717
Acquisitions at 30 Nov., 1949	28,469	3,256
Stock at 31st March, 1950	36,750 vehicles	
Total eventual acquisitions as estimated by the Minister of Transport	42,000 vehicles	

The Act intended that the Road Executive, so soon as its organisation was prepared, should control long distance carriage by road for hire or reward. As shown above, firms predominantly engaged in long distance carriage were to be bought out and thus compensated. But there were many firms which, while not more than 50 per cent. long distance, engaged in that activity to some extent. It would be inequitable if, when the day of monopoly came, they would be prevented both from operating long-distance carriage and from receiving compensation. To meet this problem the Act allowed such firms to claim Original Permits, which, if granted, would broadly enable them to continue their customary long distance operations. The Road Executive possessed the right to refuse the Permit, when, providing a fairly complicated formula of eligibility could be proved, compensation would become payable.

The number of Original Permits claimed totalled over 17,000. The Road Executive has granted over 11,000, but 7,125 of these had variations of conditions from the terms applied for. Most claims covered more than one vehicle, although often the Permit would be required for only a small proportion of the vehicle's total working time, as it would otherwise be engaged on short-distance (or excluded) traffics. Allowing 3 vehicles per permit, this results in 33,000 vehicles on "A" and "B" licences still having rights to enter into long-distance carriage for hire and reward, outside the Road Executive. These permits do not entitle the vehicles to be used on any form of long-distance carriage indiscriminately, but only to continue their customary activities—at least that is the general effect, but there are some curious anomalies.

Monopoly powers by the Road Executive were secured on 1st February, 1950. It then became illegal for any "A" or "B" licensed vehicle to carry goods for hire or reward if the vehicle was more than 25 miles radially from its operating centre, unless it was (*a*) operating within the terms of a valid claim for an Original Permit, (*b*) covered by a permit issued by the Road Executive, (*c*) carrying one of the excluded specialised traffics, or (*d*) in process of being acquired by the Road Executive.

The Minister of Transport has urged forward the nationalisation scheme with all possible speed. It is no criticism of his endeavours to say that it has taken several years. Almost intractible problems baffle the attempt to build large scale enterprise in an industry which was made up of small undertakings, and in which there are none of the usual advantages, arising from indivisibilities, of larger units. In many ways it is remarkable that as much progress has been achieved. In the eyes of the world at large, the granting of legal monopoly power represents the culmination of nationalisation, and there is little doubt that the Labour Party desired this stage to be reached before the General Election in 1950. In fact, it preceded the Election by a matter of some three weeks.

The true situation is that the process of nationalisation is far from complete. Compulsory acquisitions by the Road Executive are still proceeding, for, even though the Notice of Acquisition may have been served, the date of transfer when the Road Executive assumes legal ownership has not always yet been reached. The payment of compensation lags far behind, so much so that it is not known that final settlement has been made and paid in any single case of compulsory acquisition. The formula for calculating compensation is itself complicated, and in interpreting it there are several vital points of principle to be determined. Such determination is the task of the Transport Arbitration Tribunal which is only beginning to hear cases. In some cases agreement has not been reached on the first stage of the "provisional" assessment ; many road operators, having been deprived compulsorily of

their businesses, are having to wait many months before receiving the first payment for compensation. About 2,600 settlements are involved, each requiring separate negotiation. Some involve severance of mixed businesses and are very complicated. The financial settlement of nationalisation has hardly yet begun ; it is bound to extend over several years.

Nor has the process advanced far internally. The plan is for a neat organisation, based on groups of about 150 vehicles. There are over 200 groups, which are brought together into 31 districts, which are in turn responsible to the 8 divisions within the Road Executive. A ninth division exists for specialised traffics, which, rather curiously, does business under the old trade name of Pickfords.

Commercial control within the organisation turns on the 4-weekly trading returns of the group managers. On the revenue side, the returns comprise an estimate of the invoice value of work done, leaving the preparation of accurate financial statements until the end of the financial year, ready for annual audit. On the expenditure side, they include (*a*) actual payments made during the period on running costs, tyres and maintenance ; (*b*) payments incurred for maintenance of buildings and other fixed assets ; (*c*) a fixed formula for depreciating the capital costs of vehicles and of fixed assets except land and permanent buildings ; (*d*) a predetermined arbitrary charge for the divisional and central administrative costs of the organisation. The questions of interest on capital and capital redemption are left until the returns reach the headquarters' accounts, where these items are treated under the heading of profit.

Within three weeks after each four-weekly period the group managers meet together under the district manager to report and review the profit and loss situation in their groups. This provides a desirable review of the commercial progress of the revenue-earning sections of the undertaking.

Some weaknesses in the system are beginning to show. The evidence does not indicate that much is done to reward initiative or to condemn lack of diligence. A system of paid managers, assured of salary and pension irrespective of vehicle

earnings or excessive costs, fails to evoke the same degree of incentive to secure the maximum possible usage of the instrumentalities as obtained under the former entrepreneurs, who were spurred on by obvious and immediate financial inducements. To obtain a high and efficient utilisation of equipment, with the great variety of haulage activities and the need for close dovetailing of operations, requires much skill and initiative. Already, many of the former entrepreneurs, who were in the first instance taken over by the Road Executive with their undertakings, have resigned their appointments, complaining of the routine controls from above and of the lack of discretion accorded to them to permit of initiative and flexibility.

Secondly, the situation in regard to one important point of detail shows both the extent of the organisation's growing pains and the impossibility of proper commercial activation while it remains unsettled. Much traffic is passed from one group to another—the expected economies resulting from the growth of the practice being acclaimed as one of the great advantages to be derived from nationalisation. The method of inter-group accounting for these transactions has been completely revised four times within little more than the same number of months. Until this problem is settled on a cost or near-cost basis, each group manager can easily pass off any deficit on a month's working by alleging the handling of traffic for other groups for which he received either no return or a less-than-cost return.

Thirdly, the group manager has limited powers on many important matters, such as price fixing or the development of further facilities; he cannot do much without district or divisional approval. On staff control and disciplinary matters he has little power except to report to the divisional welfare officer. Responsibility thus tends to be divided amongst quite a number of officials of nearly equal standing.

The system does not inherently promote great efforts to balance costs with revenue. It appears easy for the group manager to become little more than a form filler and for the

procedure of financial control to degenerate into financial recording and audit control.

The change-over from private enterprise to the Road Executive requires more than the mere avoiding of an increase in the operational costs of vehicles ; considerable savings need to be effected in order to cover the costs of the organisation. Establishment of organisation brings theoretical advantages in regard to the better loading of vehicles, reduction of dead mileage, elimination of empty return journeys ; but it also brings disadvantages by lessening the ' flexibility with control, ' that has been the strong feature of the small-scale hauliers. Moreover, organisation itself seems in some cases to kill off potential traffic, by reason of the delay caused to the transit while arrangements are made, and of the inconvenience caused to customers by loss of personal understanding of their precise needs.

III. Competition Between Nationalised and Private Transport.

Inland transport falls into three main sectors : railways, for-hire road transport, private road transport. Thus, the broad facet of competition has hitherto been three-cornered. Apart from wide differences in road-bed and equipment, the railways differed from the other two sectors in being large organisations, and found themselves ill-suited to dealing with vigorous competition from hosts of rivals in the form of small road vehicle operators. To assist the railways, the effect of government policy has been to deprive the most directly competitive part of road transport, long-distance for-hire transport, of its strong economic characteristic of small-scale and to transform its organisation and methods into close similarity with those of the railways. The process was begun by the Act of 1933 and further advanced by the Act of 1947.

Long-distance road freight carriers for hire or reward have now been brought, in substantial part, under the aegis of one large undertaking, organised on parallel lines to the railways and subjected to the same parent, the British Transport Commission. The remaining long-distance carriers (with minor

exceptions relating to specialised traffics) can also be brought within the Commission, provided it is prepared to pay the compensation. The for-hire carriers who remain, mostly short-distance carriers, operate some 110,000 vehicles, considerably more than the Road Executive's estimated total of 42,000. Competition between nationalised and non-nationalised for-hire carriers will continue to be keen but primarily confined to short-distance carriage.

Competition in the future centres in the third sector, private road transport. Against it there compete the railways and nationalised road transport, virtually organised as one sector, and also the remaining independent for-hire carriers. Simply to consider the number of vehicles involved would over-emphasise the extent of the competition with which the Commission has to contend. Out of nearly 700,000 "C" licence vehicles,[1] large numbers are engaged on purely local work, such as deliveries by the milk and bakers roundsmen. It may be estimated that some 570,000 of these vehicles (those in the lightest categories) are hardly competitive at all with for-hire transport, road and rail. The remaining 130,000 offer competition to a greater or lesser extent, and some of these only on short-distance traffics.[2]

Private transport enjoys a considerable advantage in the matter of flexibility. Although there are some large fleets operated under private transport, the vehicles are mostly operated in small groups by small firms. It was the problem of large-scale which rendered the railways so susceptible to road competition. The latest reorganisation has merely augmented that problem by increasing the size of the railway administration to the maximum and by adding to it long-distance road vehicles as well. Competition against it from

[1] *Ministry of Transport circular*, dated June, 1950.

[2] Method of estimation : From the analysis of "C" licensed vehicles into various categories of size, as published by the Ministry of Transport for 30th April, 1950, the non-competitive vehicles were deemed to be :

(1) of those under 2 tons unladen weight ..	all	=	474,489
(2) of those of 2 to 3 tons unladen ..	50%	=	94,158
(3) of those over 3 tons unladen	none		
			568,647

private transport is provided by large numbers of small-scale enterprises, capable of rapid expansion or contraction in accordance with the traffic circumstances.

In face of the legal monopoly of the Road Executive, it becomes a matter of great importance to determine the precise limits of private transport. It is much wider than the popular definition of carrying "one's own goods." The 1933 Act defines it as the carriage of goods "for or in connection with a trade or business," but not the carriage of goods "for hire or reward." Hitherto difficulties of interpretation have tended to be passed over. Nationalised transport now has a definite interest in watching the operations of private carriers, and, if possible, in restricting them ; moreover, it is strong enough to see that doubtful points are tested before the Courts.

The problem of drawing a dividing line has caused great difficulty in other countries. In the United States, in particular, where broadly the system of public and private transport is parallel to the British system before nationalisation, the activities which may be undertaken by private carriers have been the subject of many long and contested cases before the Interstate Commerce Commission, with important appeals before the U.S. Supreme Court. Conflicting decisions have been given and the matter is far from being clearly or finally resolved.[1]

In Britain some important decisions have been reached. One concerned the transport of excavated soil and subsoil, dug out during building operations, where the Divisional Court ruled :

> "Where a contractor is paid for the removal and disposal of surplus excavation of no value, a part of the payment is for the carriage of the material, which is therefore carried for hire or reward." [2]

It thus became necessary for such work to be covered by an "A" or "B" licence, and not by a "C" licence. The digging

[1] For example, see Woitishek case, 42 Motor Carrier Cases, 205,206 ; Jamestown Sterling case, 64 Fed. Supp. 121 ; Schenley Distillers case, 61 Fed. Supp. 981 and 326 U.S. 432 , and others.

[2] Spittle *v* Thames Grit and Aggregates Ltd., 26 Traffic Cases, 109 (1937).

out and excavating of soil preparatory to building operations is surely a trade or business, which is quite separate and distinct from the business of transport. It would be thought that the transport of such excavated material was just as much "for, or in connection with" a trade or business, as the carriage of bricks or timber or cement. Nevertheless, it cannot be performed under a "C" licence on the ground that the material being conveyed has no value in itself and that the money paid by its owners to the excavators for its removal must therefore be paid in respect to transport.

In logic there is no reason why this argument should be confined to valueless materials. The only purpose of transporting freight is to endow it with a greater value at the point of destination than at the point of origin. When a trader carries freight on his own vehicles and then sells it, some of the payment he receives must relate to his costs of transporting it. Following the Thames Grit case, this transport must therefore have been undertaken for hire or reward. Hence all (or almost all) private transport is undertaken for hire or reward. This is the logical problem which has baffled the trucking industry in the United States, where the statute defined for-hire trucking as being "for compensation" ; it has been found impossible to apply this definition without a vast encroachment into activities which are generally agreed as being the field of private transport. To resolve the difficulty, the recent trend in American cases has been to explore the possibility of using the idea of the "primary business" of the firm concerned as providing the line of demarkation between for-hire trucking and private trucking.

The Thames Grit decision resulted in a large number of applications for "B" licences, for which the usual proof of need had to be adduced, entailing evidence that existing public transport facilities were not able to undertake the work. It also resulted in an "A" or "B" licence being required for the removal of "debris" arising during the demolition of buildings by a demolition contractor.[1]

[1]Gordon *v.* Crutchley, a case before Appeal Tribunal 1938, but not reported in printed reports.

Complications ensue from this decision in that it is not always easy to tell whether material being carried is of no value. Excavated materials from building operations may usually be valueless, but at other times they can be sold for fillings at other sites. Debris (usually known as hardcore) from building demolition likewise fluctuates between having a value in other uses, such as foundations for roads, airdrome runways, etc., and having no value at all ; hauliers carrying debris are sometimes keen to purchase this material, when they can sell at a price that more than covers transport costs and purchase price, but at other times they demand payment from the demolition contractor both for the transport costs and for the fee at the tipping site. Ashes and cinders are fairly constant in supply, but demand varies according to constructional work on hand ; hence, the material sometimes has a value and sometimes is dumped as rubbish.

The removal of sand from the seashore for use on farms for improving the land, where such removal is permitted by local by-laws, is another debatable case. The sand, when dug, has no value, but only a potential future value ; presumably it becomes the carrier's property until sold at a delivered price to the farmer. Is the transport being undertaken "for or in connection with" a business as a sand merchant, or is it transport for hire or reward, because the sand has no value when first dug ?

When a laundry undertakes the collection on its own vehicles of soiled linens and their re-delivery after laundering, general opinion would regard this as a legitimate aspect of private transport, even though the laundry is never the legal owner of the goods ; under the 1933 Act, this is permitted under a "C" licence. There would appear to be little difference in principle in the case of a racehorse trainer conveying a horse from his training establishment to the racecourse and back again. Yet the Divisional Court ruled to the contrary, on the ground that the training of horses was not a "process or treatment of goods in the course of a trade or business." [1] Since this decision, the administrative practice has grown up

[1] **Nugent *v.* Phillips, 27 Traffic Cases, 263 (1939).**

whereby racehorse trainers are permitted on their "C" licensed vehicles to carry horses in the course of training, but not to and from the races.

The question of the appropriate class of licence also arises where materials, such as lime, chalk, fertiliser, sand, grit, are spread on to fields or roads by a vehicle with a mechanical spreading device.[1] In a case before the Appeal Tribunal, the carriers did not purchase and resell the materials but they felt that, nevertheless, they were entitled to undertake the work on a "C" licence. The Tribunal, although recognising that the determination of points of law was the prerogative of the Courts, proceeded to give opinions which are difficult to distinguish from interpretations of the Act. It considered that the only safe course was to proceed on the basis that the operation of "delivery," even where the delivery amounted to a distribution by spreading, could never constitute the carrying on of a trade or business, to which the carriage of the goods would be ancillary; rather, the delivery in these circumstances must be regarded as ancillary or incidental to the transport. It accordingly felt that an "A" or "B" licence was necessary; being satisfied that proof of need had been shown, it proceeded to grant a "B" licence. The arguments adopted by the Tribunal give rise to much speculation as to the division line between public and private transport.

Another interesting example is the use of "C" licensed vehicles by commission salesmen, who collect fruit and produce from farms and sell it for the growers; they invoice the growers both with commission on sales and with the transport charges.

The agricultural industry possesses some important privileges under the 1933 Act, relating firstly to the use of vehicles and trailers without the need for a carrier's licence at all, and secondly to the carrying of goods for hire or reward under a "C" licence.[2] Varying opinions as to the extent of these privileges have not so far been taken to the Courts for decision. This is another line of division where the British Transport Commission may consider it desirable to seek more precise clarification.

[1]M. J. Spreaders Ltd., 28 Traffic Cases, Part V (1947).
[2]Road and Rail Traffic Act 1933, Sections 1 (7) (a) and 1 (5) (c).

IV. The Problem of Charges.

An essential part of the nationalisation plan consists of the formulation of charges schemes, so that transport's prices would be simple to understand, standardised, without preference between customers, and readily ascertainable.

The Act directed the Commission to prepare its charges schemes within two years, or such further period as the Minister might allow. The two years has already been extended to four, and further extensions are to be expected. On the freight side, the only outward progress so far made is the publication of a booklet on the outline of the principles to be applied to these schemes when they come to be formulated.[1]

Considerations as to the possible success of the charges schemes in meeting competition from private transport fall under three heads : (1) the general framework or principles on which the schemes are based, (2) the level of charges in the schemes, (3) the effects of the schemes in answering the transport requirements of traders.

(1) *Principles of charging.*

The Outline produced by the Commission claims that a reorientation of outlook and ideas is required and stresses the degree of freedom which the Commission possesses in regard to the preparation of draft charges schemes. It states the objective as being to provide :

> "a system of charges which will be effective and simple, and which, while meeting statutory obligations as to revenue, will assist in the promotion of an efficient, adequate, economical and properly integrated system of transport in order to provide most efficiently and conveniently for the needs of the public, agriculture and industry."

The foundation for this objective will lie in :

> "a Classification, together with Conditions of Carriage, Regulations, and Chargeable Distances, which, as far as possible, shall be common to all three services." (sq. rail, road and canal).

[1] "Outline of Principles to be embodied in a Charges Scheme for merchandise traffic." Published by British Transport Commission, Dec., 1949, price 1/-.

Firstly, in regard to *classification*, the Outline indicates that an entirely new scheme is to be drawn up, where loading capability is to be the prime factor and value is to be reflected to a lesser degree than in the existing rail classification. The task of compiling a classification is stupendous. In the United States, the current trucking classification contains around 10,000 entries, which are perpetually under review. The Consolidated Freight Classification of the American railroads, containing 20,878 ratings, includes in one volume the three different systems of classification for the three main territories of the United States : official, southern and western. The search for a uniform rail classification, going on for over 80 years, has still not reached success, and even now only 60 per cent. of the ratings are identical for the three systems. There has been no attempt to amalgamate road and rail classifications.

The present British railway classification contains about 6,000 entries. The Outline's proposal means the individual reassessment of all these entries by reference to the six new factors of classification which it recommends, in place of the five factors prescribed in the Railways Act of 1921. Each revised entry has to be agreed with the traders concerned, either amicably or through the Transport Tribunal. If the carriers affirm that commodities X and Y should be in a higher class than commodities P and Q, by reason of their poorer "stowage potential," the traders may well argue that they should be placed in a lower class, by reason of their lesser "risk of damage." Added to this, a small adjustment in the method of packing may alter the risk under any one of the determining factors, and the varying qualities of packing will come in for considerable debate.

The Outline does not state whether, in adjudicating between the various factors determining classification, road or rail conditions are to be applied. The "loading capability" of a standard 10-ton railway truck, particularly for a commodity like office desks, is much less than that of a smaller 6-ton road van. The innumerable technical discussions that will be required between the Commission and traders must cause much

delay before the new scheme of classification envisaged in the Outline comes into operation.

The second set of principles is bound up in *conditions of carriage*. Those proposed in the Outline do not differ greatly from the existing railway conditions, except in regard to the maximum amount for which the carrier will be liable for any loss or damage. This really constitutes a fundamental departure. Railways have always been liable for the full amount of the value of the goods, except for valuable goods where the protection of the Carriers Act applies. The railway method of charging requires the declaration of the nature of the contents of all traffic despatched. There can be no question of railways not knowing their liability through ignorance of the contents of wrapped parcels. The varying extent of their liability on different traffics is reflected in the rate charged, because one of the primary considerations in classification is the value of the merchandise.

Road transport's position has hitherto been rather different. Apart from full-loading carriers, whose practice is to quote a rate specifically for each order, carriers of "smalls" and service carriers do not trouble with a classification, except for articles of exceptional bulkiness. They accept consignments without knowledge of the contents and charge merely by weight and distance. To protect themselves against possible heavy claims for the loss of valuable traffics, they found it desirable to publish conditions of carriage containing an important innovation : their liability on any claim was limited to some such figure as £10 per package. This was slowly modified to a liability not exceeding £10 per hundredweight, subject to the carrier being prepared to pay up to £10 on any one consignment of under one hundredweight. The Outline indicates that the new scheme of classification is to apply to road transport as well as rail, and one of the factors in that classification is to be the value of the goods. Thus, under this proposal, the nature of every traffic consigned will have to be declared before acceptance by the carrier for conveyance. This removes any necessity for a limitation of liability. Moreover, it is doubtful whether traders will accept that a

public body, receiving goods into its care as a bailee, can be permitted to decline acceptance of full liability for the value of those goods.

A novel feature of the Outline is its proposal for dealing with *distances*. It rightly points out that millions of distances would be involved in calculating the chargeable distance between every pair of points in Great Britain. So a system of square groups is recommended.

> "To form these groups, it is proposed to use the National Grid System, as adopted by the Ordnance Survey following the recommendations of the Davidson Committee in 1938. Under this system, the country is divided into 10-kilometre squares.
>
> "The chargeable distance between groups will be based upon the measured mileage between a selected place near the centre of each group, using the shortest route by Class A and B roads, except at each end where lower classified roads may be used in order to reach the measuring point. The same chargeable distance will apply from any place in one group to any place in another group."

The prime purpose of transport is to deal with the obstacle of distance. Distance is the factor which makes transport charges so complicated. There is firstly the problem of agreeing the distance, with the multiplicity of possible routes. Even the B.T.C. suggestion of confining consideration to class A and B roads does not fully deal with the problem. Gradients, traffic congestion, low bridges, and many other factors, cause lorries either to take varying routes, or to take a longer route as their normal one. Modern by-pass roads are often longer than the direct route through the town, but if the by-pass is normally used it would be fair to include that longer distance in the chargeable mileage. Then there is the question of ferries, or toll bridges or toll tunnels, where in many cases the tolls divert transport to take a longer route. Even a free ferry may cause so much delay to transport that a longer route to avoid it is normally used. The choice of route for freight

transport can vary with the seasons, with the weather with the incidence of race meetings or other public events.

With rail transport the stations or sidings constitute definite points, at which the measuring of distance can start and end. Road transport is much more indefinite. Many factories and works are large establishments, which can occasion considerable differences in the actual distance of carriage, according to the precise point of pick-up or discharge. In one sense the Outline's proposals surmount this difficulty by its scheme of squares, which would avoid the troubles of measuring distances at all, so long as the appropriate squares for both pick-up and discharge are agreed.

But the proposal raises a host of new problems, relating to the precise dividing line between the squares. The squares' boundaries on the map will have to be transferred to imaginary lines on the earth's surface, providing much scope for controversy. Large numbers of works or premises will appear from the map to sit on a boundary and is the Commission or the trader to decide into which square they respectively fall? Thus, it will be necessary to decide the point in a factory which is to be taken as the point of delivery (or collection) for the purpose of calculating the chargeable distance. Is it to be the front door, the front gate, the clerk's desk to which the driver reports, the place where the vehicle rests to be unloaded, or the place to which the driver carries the goods after taking them out of the vehicle? As the charges will become part of a legal system, these matters must be precisely determined and cannot be left for settlement on the basis of good faith.

On some occasions the boundary of a square will cut across a dock or harbour. It would make mockery of the system of charges if a trader finds that, because a boat has to berth at the next quay in the dock, thereby passing over the boundary-line, he becomes liable for a heavier scale of road charges.

The system of squares will cut rigidly across commercial areas. Trade and industry have always been opposed to any granting of preference, as between one trader and another, by

public transport ; their opposition becomes more intense when public transport is a monopoly, as with the railways in the past and now with the British Transport Commission. If there are two firms of printers on the same trading estate, who happen to be situated on opposite sides of a boundary-line, it is hardly to be expected that they will be satisfied with different transport charges for what would otherwise be identical transport movements.

It is certain that commercial zones, where there is a community of trading interests, must be recognised and reflected in the charges schemes. This must cause sweeping departures from the neat system of grid squares. The chief principle of charging demanded by the public from a public body is a measure of equity between consumers. At first sight the scheme of grid squares seems to provide this, but closer examination proves that it causes arbitrary divisions and promotes serious inequalities. Rather than squares on a map, it is much more important to give recognition to industrial areas and zones of business. The strength of these forces is shown in the fact that the railways have adopted group rates on various traffics, where the same rate applies to all stations in the group.

The Outline, in making the suggestion of grid squares, does not mention rail transport. Some interesting points will arise between road and rail, when their loading points at a particular factory lie in different grid squares.

There are so many difficulties, both of principle and of administration, in trying to apply the scheme of grid squares that it is most doubtful whether it will ever be adopted.

(2) *The level of charges.*

Whatever may be the importance of the constructional problems of the charges schemes, the primary factor determining whether traffic will pass to the Commission or be retained for conveyance by private transport lies in the level of the charges in relation to the costs of competitive services. As to the absolute level, it is naturally difficult to expect the Commission

to say much at this stage, as there may well be general movements in the level of costs prior to the introduction of the charges schemes.

Very little tangible information is available to assess the likely level. The Commission indicates that it is pursuing cost and efficiency studies, but no substantial particulars have been disclosed. Moreover, the crucial question of the relativity of road and rail charges has yet to be settled. On one occasion, the Chairman of the Commission said that the level of road charges might be less than rail for the shorter distances, equal with rail for the medium distances, and more than rail for the longer distances; but he gave neither reasons nor details. The Outline bestows just one sentence on the matter:

> "The charges by the respective forms of transport may, however, differ, but should be so framed as to encourage traffic towards the service which can convey it most conveniently and economically."

If the word "economically" means the covering of the full costs, including capital charges, the new system would appear to involve little change from the existing system of competition between road and rail. The difference to be secured by integration must lie in the word "conveniently," but the meaning of the word is not disclosed.

In trying to achieve a low relative level of charges, the Commission should derive benefit from the economies which are claimed to be the fruits of the integration of transport under nationalisation. Against this, it must experience additional costs arising under two heads: firstly, the cost of administering the permits which allow the non-nationalised hauliers to transcend their 25-mile limitation; secondly, the cost of preparing the charges schemes, including negotiations with traders, submissions before the Transport Tribunal, and the expenses of the Tribunal itself. Such costs do not fall on "C" licence undertakings, which thereby enjoy an advantage in comparison with the Commission.

The Commission's need to standardise charges, a need which arises not merely from its instructions under the

Transport Act, but also from its own necessities in the administration of a very large organisation, also affects the level of charges. The inference from the standardising of charges is that the rate for, let us say, a haul of 10 tons of commodity "X" for 50 miles, would be fixed at the same figure for any part of the country and for all traffic conditions. Moreover, once settled by the Transport Tribunal, it would almost certainly remain unaltered for fairly long periods, and could not be adjusted to meet short-term fluctuations in traffic density.

Thus, it would be effective in relation to a wide variety of operating conditions. Even the geographical circumstances governing any such haul vary greatly, not merely in different parts of the country, but also between different points in the same general area. The divers times and places at which the haul may be required produce varying costs in such matters as : (*a*) direct operating costs, including fuel, wages, maintenance, and time incurred ; (*b*) likelihood of return loads ; (*c*) amount of empty running to and from the carrier's premises ; (*d*) convenience of fitting that haul in with other hauls, having regard to the general usage of the equipment and the operating schedules of the staff involved. Apart from the direct operating costs, the other matters can be summarised by saying that the biggest single factor affecting costs in transport lies in the continuity over time of the use of the instrumentalities. This is a factor which is most difficult to prognosticate.

As the Commission is expected to give a nationwide service, available to any section of the public on demand, it must allow, in estimating its costs for the build-up of any charge, for the most adverse circumstances in costing, and particularly for a low percentage use of equipment and staff over periods of time. This must tend to force the Commission to seek every opportunity of raising the general level of charges, so as to cover the cost of providing service under unfavourable conditions.

(3) *Effects of charges schemes.*

The construction of the proposed charges schemes rests upon the principle of averaging. Instead of fixing a price for

each transaction based on the expected costs of that particular transaction, transactions are grouped and an average price is laid down covering all transactions that fall within each group.

Existing procedure on charges has rested on the grouping of transactions mainly by reference to three factors : commodity, distance, and quantity. Even this grouping still leaves the number of different prices that may be incurred at a very huge total. Yet it represents an averaging of costs within each price-group, so that, assuming that the price fairly represents the average costs, some transactions will be performed above-cost and others below-cost. The new proposals contained in the Outline do not change this broad structure.

However, the procedure does not reflect the further cost factors related to geography, return-loading, and usage over time. So greatly do these factors affect costs that it is rare for the same set of costings to recur, even for what appears to be a repeat transaction. Their strength is seen in the railway exceptional rates, whose existence indicates that the primary grouping of transactions by reference to commodity, distance and quantity has proved insufficient ; exceptional rates exist in large numbers and adhere to more than 80 per cent. of the rail freight tonnage carried, equivalent to some 70 per cent. of the gross freight receipts. As these factors act independently of each other, they can on occasions pull on costs all in the one direction, whether adversely or favourably. Hence the extent of the oscillation of costs around the mean point in the charging group (represented by the price charged) is very considerable.

Amongst the many traffic flows, traders can from time to time control some of these cost factors. For example, a trader may by careful organisation arrange balanced loading of his private transport vehicles, both in respect of time and of return loads. He may adopt the principle of operating his own vehicles for only a proportion of his transport needs, leaving public transport to cater for the more fluctuating margins consisting of peak movements and movements where return loads are not readily available. Under the most favourable circumstances, he can organise his transport as a conveyor

belt working continuously ; the Commission cannot compete even on a cost-against-cost basis, for it is bound to have some additional costs which the trader avoids, if only the cost of running empty to and from the latter's premises. If the Commission is to be anchored to average prices arising from the charges schemes, this takes it even further away from the trader's costs of transport.

It may be expected that, in general, the dense streams of traffic, where traders can organise a high degree of use of transport equipment, are not likely to pass to the Commission. Indeed, the more that standardised charges, representing a simplification and an averaging of the costs of many varied transactions, are introduced, the more remote is the possibility of the Commission competing for the denser streams of traffic.

Where competition exists, any scheme of charges offering transactions of varying costs at a uniform price is obviously vulnerable. The existence of unrestricted private transport means that all those traders who are sufficiently large to be able to operate fairly continuously even one or two vehicles will watch carefully the averaged prices offered by public transport. When the cost of conveying a particular consignment is *below* the published average price, the trader will retain it for conveyance by private vehicles ; when it is *above*, he will pass it over to the Commission. Inevitably, a spiral effect on the Commission's costs and prices is developed. The loss of below-cost traffic in any charging group must cause a rise in the average cost of conveyance, either involving the Commission in financial losses or causing it to raise its price ; if the latter course is adopted, this must lead to further traffic losses.

This is a most serious problem to both the producers and buyers of transport. For the Commission it raises the question of the feasibility of charges schemes and the problem of finding revenue to cover its mounting costs. For trade and industry, as the buyers of transport, it involves in the long run a major question of choice. The Commission cannot compete on the basis of standardised charges with unfettered private competition. If traders want to retain the freedom to operate

their own transport, they cannot expect standardised charges from public road transport ; if they want neat and orderly schemes of charges, without discrimination and simple to understand, these cannot be built as paying propositions *unless* the Commission is granted an effective monopoly of inland transport, which means the surrender by trade and industry of their freedom to operate private transport. A choice must be made ; both cannot be had, and made to work satisfactorily, at the same time.

V. Integration.

The keyword underlying public policy for road transport has been "integration," which is primarily interpreted as the integrating of all transport services, passenger and freight, including road, rail and canal, into a composite whole. Yet technical development in recent years has been in the contrary direction of requiring road freight transport to be integrated with each particular industry for which it is carrying.

Transport of freight involves much more than mere conveyance. Unlike passengers who can move themselves to stations stipulated by the carrier as the points at which conveyance begins and ends, freight is not self-mobile. Often, freight passes for transport only if the carrier is prepared to collect it from its precise location and to deliver it to an equally precise point. The performance of collection *to* the carrier's vehicle is often an arduous, or intricate, or highly-skilled, task ; similar considerations apply to delivery. These connecting movements, before conveyance begins or after it ends, are highly important. They are rarely performed by the railways and, in the days when the railways were the only carriers, had perforce to be undertaken by the customer. With the emergence of road transport in the 1920s, they again came to be thought of as part of the throughout movement of freight from first site to final destination.

They are a problem, not only for the carrier, but also for the traders at both ends. In many cases they have to be considered as part of the processes of the non-transport industry concerned, its factory organisation, its distribution

methods, or its scheme of integrated production. Unless for-hire transport is prepared to fit itself in with those processes, the trader often finds it easier to organise his transport as something ancillary to his solution of the problem of these connecting movements. Hence, a beginning of the growth of private transport.

An interesting example is to be found in tailboard delivery. Under the war-time Road Haulage Organisation of the Ministry of War Transport, attempts were made to stipulate that delivery of freight after conveyance should be effected at the tailboard of the vehicle, but eventually it had to be conceded that the custom and practice of the trade should be permitted to continue. It seems clear that the Commission would also like to stipulate tailboard delivery, if ever it got an opportunity to do so, for that would confine its duties solely to conveyance. But it throws on to the trader the difficult problems of transferring the freight from the tailboard to its desired point of destination. The difficulties may decide him not to remove the freight at all. Or he may find he can organise that transfer movement more easily if he organises the vehicle movement at the same time, and he thus turns to "C" licensed operation.

The precise degree of service required for these connecting movements varies widely between industry and industry, between firm and firm, and between premises and premises. Buyers expect transport to fit exactly into their requirements ; they seek individualised services, such as can only be provided by a highly flexible system, rapidly adapting itself to every change and to every customer. Standardisation is impossible. It is against this background of the diversity of requirements that the integration of transport, a policy reaching its culmination in nationalisation, moves towards the establishment of standardised practices, which, in the true tradition of public services, are to be strictly impersonal, without favour or discrimination. A large-scale undertaking inevitably seeks to give precision to the exact extent of the service it undertakes to render, as seen in conditions of carriage and other carrier's regulations.

Some difficulties of standardised service can be seen when the factor of time is considered. Every buyer of transportation has different ideas as to the precise value which he places on time, whether total transit time, or the precise time of collection and/or delivery, or reliability in relation to time. Small carriers in the past adjusted their services to meet the customer's needs in this respect. Nationalised transport must tend to treat all alike ; it may find it can offer two general standards of service in relation to time, but it is more likely to confine itself to one standard service (apart from the exceptional cases where the customer expects a special quotation because of special time requirements). This identity of treatment arises firstly because a public service is expected to shun any semblance of preference and to cling to strict impartiality and impersonality, and secondly because the size of the undertaking requires routine methods to the employed. There is danger of the whole organisation breaking down if services have to be adjusted to meet the whim of every customer in regard to time. It may well succeed in presenting a degree of service in relation to time which meets the average requirements of customers. But some customers will be prepared to expend more on transportation in order to secure a speedier, or more precise, or more reliable, time service, and will operate their own vehicles for that purpose.

Road transport expanded rapidly in the 1920s because it provided an individualised service which could be perfectly integrated with other activities in the continuous process of production and distribution. The new for-hire carriers, in contrast to the railways, were prepared to undertake the "throughout" service, including those difficult connecting movements. The effect of the legal controls involved in the 1933 and 1947 Acts has been to restrict greatly the inherent flexibility and adaptability of for-hire road transport, and to drive it backwards into providing no greater degree of service than that offered by the railways. The great economic values of the motor vehicle are being more and more confined to private transport. Those traders who are large enough to operate "C" licensed vehicles can still obtain the individualised

service of road transport, whereby it is co-ordinated as part of the continuous process of production. The main burden of loss from the restrictions placed on for-hire transport (including both nationalised and "A" and "B" vehicles) falls upon the smaller industrial and trading establishments, who are unable to contemplate the use of their own vehicle on "C" licence.

The natural development of road transport lies in its integration, section by section, with the numerous industries which it serves. Along that road it could achieve both technical and economic progress. Instead, policies have been developed which aim at its own co-ordination and unification, and are directly in conflict with its economic destiny and potentiality. There can never be any satisfactory method of integrating road transport as a whole, let alone any super-integration with railways as well. The only integration possible is on a piecemeal basis, whereby its various sections are increasingly co-ordinated and synthesised with the particular industries being served.

RALPH CROPPER.

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Books Received

"UMRISS EINER GESCHICHTE DER PREISE UND LOHNE IN DEUTSCHLAND" :
Volume 2B. by M. J. ELSAS.
Published by A. W. Sijthoff's Uitgeversmaatschappij N.V.,
Leiden, Holland.
138 pages. Price fl 10.00 unbound.
„ „ 12.50 cloth.

Report on the
"FIRST CENSUS OF MANUFACTURES, INDIA—1946" :
Vols. I and II :
Published by Directorate of Industrial Statistics,
Ministry of Industry and Supply,
Government of India.

"THE BALANCE OF PAYMENTS AND THE STANDARD OF LIVING" :
by R. G. HAWTREY.
Published by The Royal Institute of International Affairs,
Chatham House, St. James's Square,
London, S.W.1.
158 pages. Price 8s. 6d.

"STATISTICAL INDICATORS OF CYCLICAL REVIVALS AND RECESSIONS" :
by G. H. MOORE.
Published by The National Bureau of Economic Research, Inc.,
1819 Broadway, New York 23, N.Y.
98 pages. Price $1.50

"A SURVEY OF THE INDUSTRIAL PROSPECTS OF THE SOUTHAMPTON REGION" :
by Professor P. FORD and C. J. THOMAS.
(Interim Report—prepared at the Request of the Southampton County Borough Council).
Published by B. H. Blackwell Ltd.,
49 Broad Street, Oxford.
67 pages. Price 2s. 6d.

"TRADE UNIONS IN THE NEW SOCIETY" :
by HAROLD J. LASKI.
Published by George Allen & Unwin Ltd.,
Ruskin House, Museum Street,
London, W.C.1.
182 pages. Price 10s.

"CHANCE AND CHOICE BY CARDPACK AND CHESSBOARD" :
by Professor LANCELOT HOGBEN.
Published by Max Parrish & Co. Ltd.,
Adprint House, Rathbone Place,
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Published by George Allen and Unwin Ltd.,
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London, W.C.1.
637 pages. Price 30s. net.

"INDUSTRIALISATION OF KARNATAK" :
by Y. S. MAHAJAN.
Published by R. V. Sirur, Esq., Hon. Secretary, Karnatak Chamber of Commerce, at its Office at Hubli.
247 pages. Price Rs. 3-4-0.

"THE SOCIAL CRISIS OF OUR TIME" :
by W. ROPKE.
Published by William Hodge & Co. Ltd.,
86 Hatton Garden, London, E.C.1.
260 pages. Price 15s. net.

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Published by Institut fur Weltwirtschaft at Kiel University.

"VARIATIONS IN WORKING-CLASS FAMILY EXPENDITURE" :
by J. L. NICHOLSON.
Published in the *Journal of the Royal Statistical Society* and reprinted by The Institute of Statistics, University of Oxford.
Price 2s. 6d.